The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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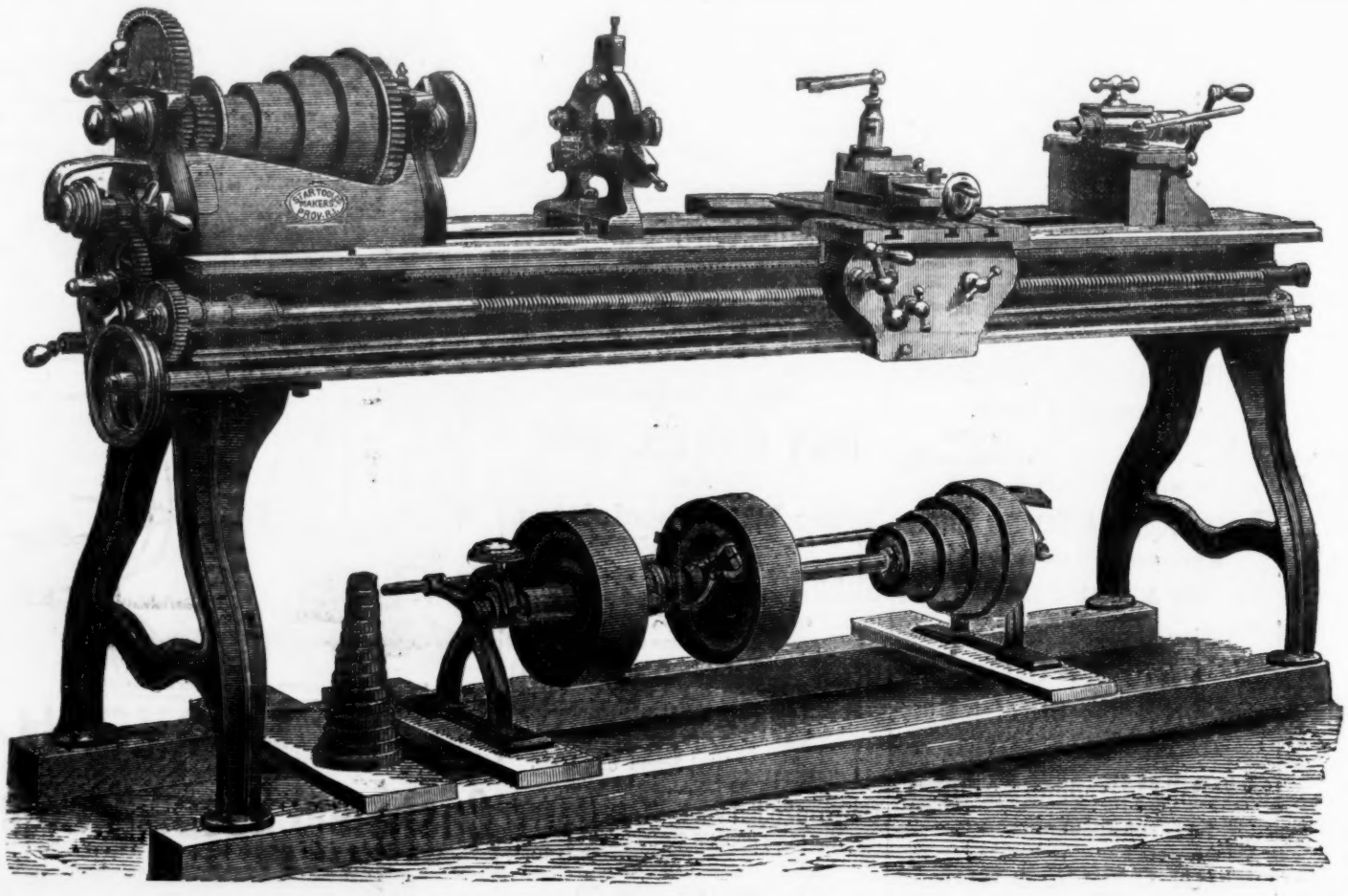
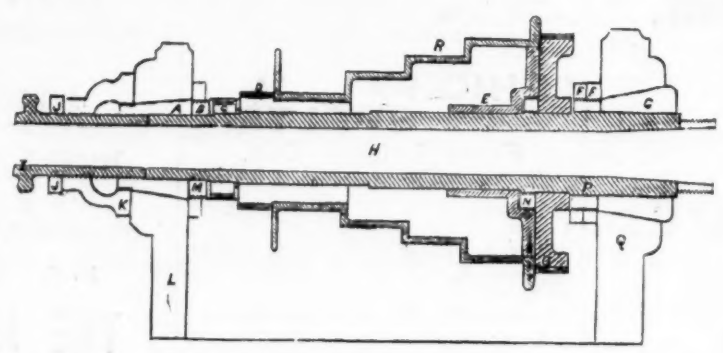
Improved Engine Lathe and Lathe Head.

We give upon this page cuts of a screw cutting engine lathe, made by the Star Tool Company, Providence, R. I., together with a section of the lathe head. The design of the lathe itself is very good, the framing being strong and stiff, points of vital importance in a machine of this kind where accurate work is to be done. Rod and friction feed independent of the steel lead screw, with its open and shut nut, are provided, so as to reduce the wear upon the screw as much as possible and preserve it intact for screw cutting. The tail stock, which is not quite correctly shown in the cut, furnishes an unusually long and steady bearing to the spindle. The lathe is made in a variety of sizes. Those swinging 15 inches are furnished with beds of various lengths, the shortest taking 3 feet 3 inches between centers and the longest 7 feet 3 inches. In general arrangements the lathe is very convenient. The general design alone, however, is not the only governing point in the selection of a tool. Manufacturers at the present day have learned that fine workmanship in tools is an absolute necessity if good work is to be cheaply produced, and they are giving unusual attention to those details of construction which aid in securing durability and accuracy in them. The lathe head used upon this lathe, of which we give a section, is a recent invention of Mr. E. A. Beaman, of the Star Tool Co. In the cut, L and Q represent the head stock, which has circular and tapering holes to receive the round boxes A and G. These are turned to fit and then cut in half They are held in position by the nuts F F and B K. In this way the spindle P is always kept true and in line, the upper half of the box being lowered just as much as the lower half is raised. The hole H through the spindle is one inch and five-eighths in diameter. So far as we know, this is the largest hole made in any hollow spindle lathe, unless of much larger swing. Besides its conveniences for work, it necessitates the use of a large and consequently very stiff spindle, P, with bearings in proportion, which makes a most desirable job, and as there are no straps nor caps the spindle is very firmly supported by the head. O is the large spindle gear, and is retained in position by the nut N. The 4-section cone is shown at R, and is intended to carry a 2¼ inch belt. E is the cone head, D the small gear on the cone. C is the feed gear on the spindle. The end thrust is taken by the step I, held by the bracket K and fastened by the check nut J. This head is designed for lathes having a swing of 15 inches. The head being a single casting or solid throughout gives a stiffness that is very valuable and makes it almost impossible for the spindle to get out of line under any circumstances. Steel is used for the spindle and for all other parts where it can be advantageously employed.

Several of our friends have lathes of this kind at work, and we find they have a most excellent record in producing good work and are at the same time very durable and convenient.



HOLLOW SPINDLE LATHE, BY THE STAR TOOL COMPANY.



SECTION OF HOLLOW SPINDLE LATHE HEAD WITH TAPER BOXES.

Curious Bankruptcy Figures.—While the bankrupt law was in force there were 103,005 bankruptcies in the United States. The Boston *Commercial Bulletin* has reviewed and analyzed these figures, and shows some interesting facts. Relatively to population, Massachusetts had the most bankruptcies (one to every 160) Maryland had the fewest (one to every 904 of population). Virginia ranks next to Massachusetts, and California is third. Connecticut is sixteenth in a list of forty States and Territories. The list of more than 100,000 bankruptcies looks immense, but there are at least 700,000 business men in the country, and on the other hand there are among the bankrupts at least 10 per cent. who have failed more than once, and also a good many not in active business, bankrupt by indorsement or other outside connection. It is, therefore, about a fair conclusion that one in nine of the business men of the country have failed in the past ten years. This is bad enough, but it is even below the general rule that one in every six men fails, which has been accepted by statisticians.

Philip A. Otis, who was in charge of the exhibit of the Northampton Emery Wheel Co. at the Paris Exposition, not feeling satisfied with the first award, a bronze medal, made a written protest against it on the ground that the examination had not been sufficiently thorough, and succeeded in getting a re-examination on Oct. 2. The committee were unanimous in deciding that justice had not been done, and they awarded a silver medal in addition.

Business History of the Zinc Stamping Industry and its Failures in the United States.

The manufacture of stamped zinc architectural ornaments in this country was commenced some ten or more years since, in Chicago, by an organization called the Chicago Zinc Roofing and Ornamenting Company. The chief promoter of the enterprise was Mr. F. W. Matthiessen, of La Salle, Ill., of the firm of Matthiessen & Hegeler, favorably known as the pioneer manufacturers of sheet zinc in this country, who held the presidency of the organization. The superintendency of the concern was in charge of Mr. Gateau. The secretaryship was held by a Mr. Randolph, a man of undoubted ability, and one of considerable influence among architects and builders. With ample capital, and at a time when building operations were brisk, when prices for all building materials were fair, and when the public generally were willing to receive any new enterprise favorably, this concern seemed sure of attaining success. But from some of its constituent elements, and from certain features of management which were embodied in its policy, it was destined soon to come to grief. Its designs, patterns, dies, machines, tools, workmen, and, we might add, its system of business, were all imported from France. The whole enterprise was an exotic, transplanted to an uncongenial soil. There was not that ability of adaptation about the managers necessary to conform the project to American notions of business. In fact, instead of adapting itself to the wants of the building trades as then existing, the company held to the foreign ways with which it had started, and quarreled with builders because they were not well pleased with its plan of conducting business. The designs of ornaments with which it commenced operations were exclusively reproductions of patterns in use in Paris, and as a natural result a very large proportion of them were unsaleable in this country, or if used at all, presented in connection with other features of a building, an incongruous appearance. Herein was lost an opportunity of building up an industry which, while being a matter of profit to its promoters, would undoubtedly have been of real service to the nation, in affording an economical and tasteful style of ornamentation, capable of indefinite application. While the responsibility of the lack of success experienced by this enterprise rested very largely upon its superintendent, the fixing of the blame did not serve to remedy the harm done. The disgust and disappointment of the trade incident to these abortive efforts to serve it, resulted in a prejudice against zinc ornaments themselves, and the company soon experienced the force of unpopularity. An attempt was made by the president at reorganization, with a view to changing the superintendency from that of a policy of French ideas to the embodiment of American utility; but it was soon discovered that the party necessary to depose was so intrenched and fortified by contracts that such a move was almost impossible. During a season of disgust and apathy which succeeded this attempted change, the great fire in Chicago wiped the concern out of existence, and there ended the connection of the substantial men of the company with the attempt to establish the manufacture of zinc ornaments as an industry in America.

From the ruins of the conflagration sprang two new concerns, each eager to reap an expected harvest in the exceptional demand which was anticipated to spring from the rebuilding of the city. The superintendent of the old concern, associating with a man of means, organized what was termed, in contradistinction to the former enterprise, the Chicago Zinc Roofing and Ornamenting Works, with Gerard & Gateau as proprietors. A Toledo, Ohio, firm, Ballard, Freeman & Maples, who had been long and favorably identified with the manufacture of metal cornices, with the tacit approval of the president of the old concern, who controlled such of its effects as had escaped the fire, undertook the manufacture of zinc ornaments in that city. The superintendency of their enterprise was entrusted to a Mr. Perkins, whose qualifications for the position consisted in a theoretical knowledge of the cornice business, and a supposed comprehension of the mistakes made by the defunct pioneer concern. Both of the new attempts were unprofitable from the start. Many of the blunders of the old company were repeated in each of them. The ideas of management peculiar to the first effort were naturally very largely incorporated into the second one which came under the control of the same superintendent, and while the Toledo enterprise was composed of fresh material, it yet failed to infuse new and saving ideas into the business. In many respects the two concerns at this period resembled each other. Each duplicated the designs of the defunct concern in its dies. Each republished the catalogue of the old concern, and neither seems to have profited to any considerable extent by the mistake of the pioneer enterprise. We have no desire to encumber this history with personalities or unimportant details. Our only object is to show, so far as we are able, some cause for the hitherto unexplained lack of success in the development of this industry, and to account in some measure for a part of the prejudice against stamped ornaments which exists in the mind of the trade at large. The trade naturally became disgusted by such foolish efforts to serve it, which feeling was not lessened by the jealous rivalry manifested by at least one of the concerns engaged in this business. This disgust, coupled with the greater and more patent cause of offense—the one of apparently unreasonable prices placed upon the goods produced, and which was the necessary complement of high cost of manufacture, induced by the blunders of manufacture and consequent small demand which we have described—became so deeply seated that it will require great exertion upon the part of any enterprise in the future to displace it and to obtain even a fair showing for the reception of its goods, no matter how great their merits.

Girard & Gateau soon developed an incompatibility of temper, and an attempt to dissolve partnership upon the part of Mr. Girard was met by the production of a contract upon the part of his associate, similar to that which had proved so advantageous to him in his position in the original company, and the stipulations of which were so framed as to make it the basis of a remarkable and long-continued quarrel. There followed a series of attempts to dissolve and to prevent dissolution, constituting a strife almost unparalleled in the history of partnerships. By appeals to the courts, where the case was alternately heard and dismissed for lack of cause; by proceedings before referees, and by every resort known to the legal fraternity who conducted the quarrel in the interest of the belligerents, the strife was continued through a period of several years with varying results, sometimes one partner and sometime the other being in possession of the works, until a comparatively short time since, when either from intentional neglect upon the part of the financial partner, or because he had become exhausted, the rights of creditors forced the concern to sale, and its dies and patterns were distributed among a number of buyers.

Ballard, Freeman & Maples conducted their enterprise a little less than two years, when they sold it out to an organization known as the National Ornament Company The business was conducted by this concern a little more than a year, when its interests were transferred, by process of consolidation, to the Kittredge Cornice and Ornament Company at Salem, Ohio. This company secured the contract on the Centennial buildings at Philadelphia, in which was a large amount of pressed zinc work, and for a time it seemed to be on the high road to prosperity; but recently a fate common to many enterprises in these times has overtaken it, and its shops are now in the hands of an assignee. This company's failure was not directly attributable to that part of its business which consisted of the manufacture of zinc ornaments, but in its failure that part of its business suffered in common with the rest.

Some few concerns in various parts of the country devoted to the manufacture of cornice work have at different times manufactured a part of the ornaments they have required in their own business, but the enterprises above described are the only ones which have attempted to make this industry a specialty. It remains for the future to show what is to be the fate of a business of real merit and utility, which has suffered so severely at the hands of its friends and promoters.

British Railway Interests.—A great deal of cautious speculation is now going on in England as to the future of its great railway interests. It is asserted by careful experts and politico-economists that the course of some of the leading roads is toward bankruptcy. The capital involved in English railways being some £650,000,000, the interest on this, some 4.32 per cent, is thought, in consideration of the risk, to be a very pitiful return. The trouble seems to lie in the fact that there is a steady increase in the cost of railway service. It is said that if things go on as they have done for the last five or six years, the railway shareholders will have either to be contented with smaller returns, to charge the public higher rates than they do, or to detect and stop the leak by which their profits are slowly and surely ebbing. Estimating the actual saving England has made in the last 50 years by railroad transportation, the nation is benefited every year to the wonderful amount of £340,000,000. A rise of one per cent. on the actual cost of transportation means a loss of £338,600 to the nation. Working expenses appear to augment out of proportion to the earnings on increased traffic. In 1860, when the earliest summary of the expenses of railways was made in the United Kingdom by the Board of Trade, the working expenses were 47 per cent. of the gross income. In 1873 this average had increased to 53 per cent., and in 1874 to 54 per cent. of revenue. Such augmentation was supposed to arise from the increased price of fuel. Since that time, however, coal has very much declined. In 1876 the average 54.25 per cent. of working expenses was arrived at, the lowest on a special road being 39.08 per cent., and the highest 56.65 per cent. The result arrived at may be expressed as follows: If the working cost is increasing at the rate of one per cent. per annum, the aggregate capital of £650,000,000 must yield, even with greater traffic, smaller returns. Of course there are exceptional lines, mainly passenger roads, which make excellent returns, but it is the mineral trains, which show not only diminution of income per mile in the gross, but this constant increase of the rate of working charges.

An investigation into the causes of the terrible mortality from yellow fever in New Orleans this year shows that the wonder is not that so many, but that so few died. A committee appointed by Mayor Pillsbury has discovered that the seeds of disease and death were scattered throughout the city last spring and summer by 4000 loads of kitchen garbage, which were hauled from the public dumping ground to fill the streets. The citizens have made complaints all along of the disgusting stench arising from this sort of road-bed, and the Board of Health at last found their complaints worthy of attention and asked a stoppage of this sort of filling. John McCaffrey, the city official who allowed it, however, told the board, in so many words, to mind their own business, and continued to haul from the dump, though transferable permits, good for any amount, were granted, so that the quantity taken might not be easily known. The committee of investigation express the general opinion that if McCaffrey's fillings did not originate the yellow fever they helped to supply material on which it fed, and the contumacious official is now in a fair way to be retired to private life, followed by the anathemas of an indignant and afflicted community. He ought to be hanged if what is alleged of him is true.

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SEE PAGE 9.

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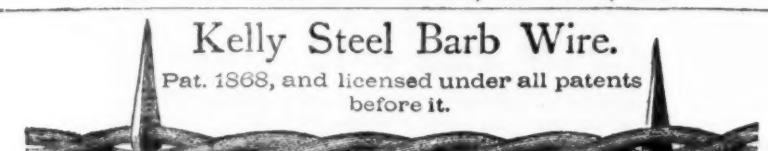

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Metal Spinning.

We take the following from *The Metal Worker:*

Spinning is a term employed in sheet metal work to indicate a process of drawing and shaping, which in many of its features resembles the operation of turning in wood, &c. A lathe is employed, by which a blank and a chock are rapidly revolved, and the shape is imparted to the metal by the pressure of a blunt tool. Our engraving is a representation of the general manipulation and the appliances used. The metals used in spun work are sheet zinc, copper, brass and some of the soft and ductile alloys.

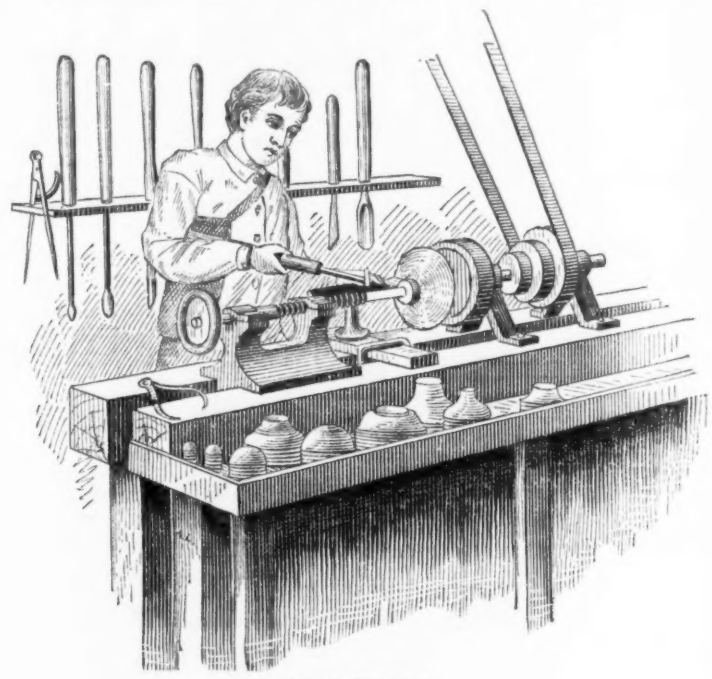
In the manufacture of sheet metal cornices and other decorative work for buildings, spun work forms no insignificant element, being used both in the principal parts and for purposes of ornament and embellishment. The metal used in this connection is ordinarily sheet zinc, although occasionally copper and brass are employed. The chocks are turned from gum, apple, cherry or other tough or close grained woods for all lots of ordinary quantities, but where a very large number of a pattern is required metal chocks are employed. For large shapes wood is employed exclusively. In the use of wood chocks green timber is generally preferred, on account of greater solidity, absence from seasoning cracks, and on account of being more easily turned to shape. Where a wood chock is taken off the spindle for any purpose, with the expectation of using it again, it is preserved during the interval either by immersion in water or by burying in wet shavings or moist earth. The greatest care is necessary in the use of wood chocks, save where very few pieces of a kind are required, to preserve them, both from seasoning or shrinking, and from being reduced in size by the careless use of the trimming tool employed upon the metal. For metal chocks cast iron, cast zinc or a Babitt metal are employed. Either of the latter two possess advantages over the former in the convenience of casting to approximate shape with the common appliances of the shop. While cast iron can be obtained only by ordinary foundry processes, necessitating delay, it possesses the compensating advantages of wearing longer, producing smoother and more accurate work and costing less.

In lamp work and other similar lines the art of metal spinning has been developed to a very high degree. By means of composite chocks, or those which are constructed in sections and locked together with a key, which provides a means of withdrawing this from finished work, forms are produced from one piece of metal, having alternate ridges and depressions, neck-shape like bottles, which on casual inspection appear marvelous. In small articles of this nature brass is very generally employed. Repeated annealing is required during the process, and great skill in the operator is essential.

In large articles equally unexpected results, by this manipulation, are produced, although differing very much from the sort just described. In large forms, like those used for the borders of center pieces for the ceilings of rooms, and for similar purposes, which are ordinarily produced only by the aid of several seams, the expert spinner, by the use of several chocks with the same blank, first applying one side toward the chock and then the other, as the forms to be made are either projections or depressions, will produce all the elements of a quite intricate molding in one piece. The lid or cover, as of a bucket or water cooler, together with the rim which fits into the neck and its projecting edge, are made in one piece also. Both of these examples are produced in ordinary sheet zinc

In the process of zinc spinning frequent annealing is necessary. The appliances for this are an open charcoal fire, a gas jet, or a flame from gasoline, or an annealing oven constructed upon the same general principle as employed in zinc stamping. This may be described as a flame-encircled box, which in its situation and arrangement in some respects resembles the oven in an ordinary cook stove, into which are laid the blanks in piles. The heating process is slow, but a pile of blanks once brought up to the proper temperature retains its heat for a comparatively long time, even when removed from the oven.

Spun metal work, besides being employed in cornice work, lamps and lanterns, as above mentioned, enters into the trimmings and decorations of gas fixtures, lightning rods, weather vanes, spire ornaments and finials. It is used extensively in the manufacture of plated ware, water coolers, spice canisters, bird cages and many other articles. The use determines the metal employed, the process of manipulation remaining substantially the same in all.


METAL SPINNING.

A New Blast Furnace.

Iron gives us an account of a new blast furnace designed recently by Mr. Alexander Morton, of Glasgow, which threatens to strike a blow at all notions hitherto held on the chemical and physical phenomena of the blast furnace. Mr. Morton proposes to make a new communication with the interior, with the object of allowing the more non-combustible gases either to escape directly into the atmosphere or be withdrawn from the furnace at some distance between the ordinary tuyeres and the space above the charge, while the more combustible gases generated in the upper portion of the charge might collect at the top in order to be utilized in the ordinary way. According to one arrangement, Mr. Morton constructs the furnace with a surrounding circular passage about half-way between the tuyeres and the top of the charge. This passage communicates with the interior of the furnace through a series of slots in the brickwork, and the non-combustible products are permitted to escape through a short upright chimney directly into the atmosphere. The space above the charge may be in direct communication with the receiver, as at present, or the gases, which will be much purer than usual, may be withdrawn, and returned into the lower incandescent materials by an ordinary blowing engine such as that now used for producing an air-blast; or the air-blast itself may be used to withdraw the gas from the top of the furnace and inject it into the lower incandescent materials of the same or similar furnace for melting ore. Mr. Morton also proposes to apply the steam blast for increasing the draft or velocity of the gases from the upper portion of the blast furnaces through the several steam boilers and heaters, and from these into the atmosphere. He is aware that the exhaust steam for non-condensing engines has been led into the flues from the steam boilers and heaters, as also into the bottom of a high ordinary chimney, but this second part of the invention only relates to the application and use of an upright chimney, very short compared with its diameter, and otherwise constructed internally so as to insure an increase of draft by the lateral action of the steam blast. Another modification of this second part of his proposition consists in the application of a large fan blower (somewhat similar to those used for ventilating pits and mines) acting in the main or other flues so as to increase the draft and thereby induce the gases from the top of the blast furnace or furnaces through the several boilers and heaters with greater velocity.

Lignite near the Dead Sea.—It turns out that France gains something by the Berlin treaty after all, and that her protectorate of Syria, supposed to be a nominal concession, will prove of substantial value. French capitalists have secured a grant for a railway line from Jaffa to the interior of Palastine, which will open up the Jordan Valley and the whole region north of the Suez Canal. In certain contingencies this road might become of great military usefulness, but it appears further that the productive resources of the country are considerable, and, what is more surprising, that the Dead Sea itself can be turned to commercial account. The whole valley of the Jordan, from Jerusalem to Damascus, is extremely fertile and well adapted to the culture of the olive and the vine and the necessaries of life which Egypt, which has turned its attention to the cultivation of cotton and sugar cane, no longer furnishes. It is as a purveyor, however, of fuel, rather than of food, that the region to be opened by the new railway deserves particular attention. Hitherto the main obstacle to the development of steam traffic in the Levant has been the total absence of combustible material. Not only Egypt, but the shores of Syria and the Red Sea, are completely stripped of wood, and the coal imported from the West commands a price ranging from $12 to $24 a ton. Recently expensive prospecting has been made between Jaffa and the Dead Sea which, so far, have not disclosed any deposits of coal proper, but, on the other hand, have laid bare inexhaustible beds of lignite. Of itself this store of lignite is likely to prove an inestimable gain to the industries and commerce of the Levant; but we should add that the juxtaposition of asphalt in great quantities furnishes the elements of a mixture of lignite and asphaltum in the form of bricks, which is equal in heating capacity to the richest bituminous coal, while its cost on the ground is only $2.50 a ton.

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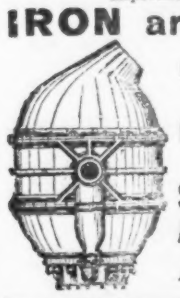

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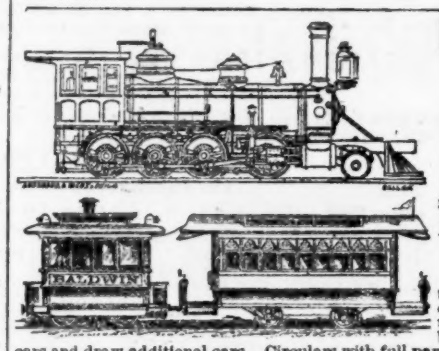

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Manufacturers of
Wheeler's Iron & Steel Combination Shafting,
Under license of the Combination Trust Co., Philadelphia.
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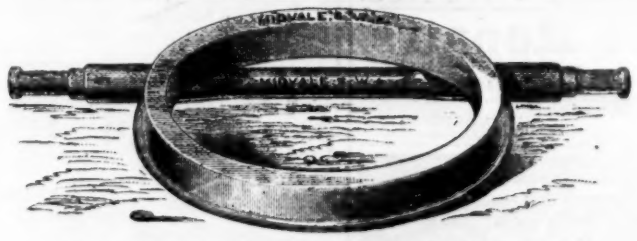

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New Patents.

We take the following abstract of new patents, recently issued, from the official record:

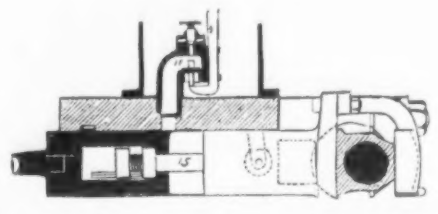
SNAP HOOK.

To Chas. W. Blakeslee, Northfield, Conn.—Aug. 6.—The snap-hook tongue *b*, having

the one ear b^2 and the sleeve b^3, in combination with the hook-body *a* and the spring *d*.

RIVETING MACHINE.

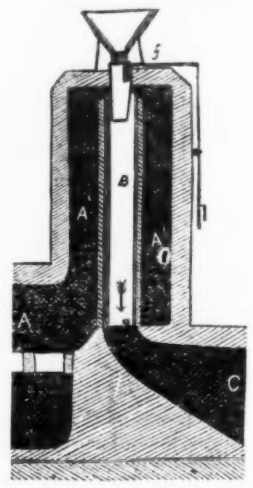
To H. McColl, Glasgow, Scotland.—Aug. 13.—1. In a riveting machine, the combination of operating mechanism with a ram made in two parts, between which is interposed a body of liquid having access to a loaded escape valve, the two parts of the ram being so connected by a bolt that the part carrying the die may be moved backward by the other portion of the ram.



2. The combination of the two-part ram, the connecting bolt 15 and adjusting nut, and the loaded escape valve with the valve 11, opening inward, and the toe-rod 2, adapted to be operated by some working part of the machine.

ORE-ROASTING AND DESULPHURIZING FURNACE.

To A. Ramage, Denver, Col.—Aug. 13.—The products of combustion pass around into the top and down through the ore tube to the ore hearth. The action of the gases is aided



by the steam entering through the pipe in the hopper tube.

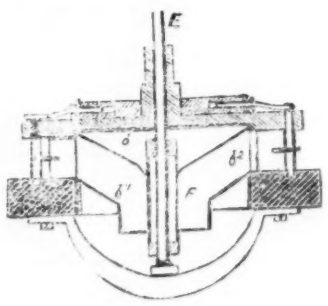
1. In a furnace for roasting and desulphurizing ores, the combination of the vertical tube B, having its upper end open to admit the flame and gases of combustion, and tube *e*, leading from the hopper, and its lower end communicating with the ore chamber C.

2. In a furnace for roasting and desulphurizing ores, the combination of the several parts described—namely, the furnace A, flue A', entirely surrounding the roasting tube B and connecting with its open upper end tube *e*, leading from the hopper, and pipe *f* and ore chamber C.

TURBINE WHEEL AND GATE-OPERATING MECHANISM.

To U. S. Sheffer and Wm. H. Sheffer, York, Pa.—Aug. 13.—The tubular case surrounding the shaft is perforated at top and bottom to provide for the escape of any water that may collect upon the dishing upper surface of the wheel.

1. The wheel, consisting of the upper conical plate *b*, the lower conical plate b^1, terminating in a ring, and radial partitions, b^2, curved in the ring portion, as shown, and



arranged to form converging buckets with a curved downward discharge.

2. The combination, with the wheel consisting of conical plates *b* b^1 and partion b^2, of the shaft E and the interposed tubular case F, having openings above and below the wheel.

3. The combination, with the vertically-pivoted gates, of the vertical rock shafts, having a loose forked connection with said gates, and rigid arms above loosely connected with a circularly-adjustable disk.

Experiments with Gelatine Dynamite.

Some time ago it will be remembered Nobel discovered that a comparatively small quantity, 6 or 8 per cent., of a nitrated cellulose, prepared from cotton in a peculiar manner, has the property of transforming liquid nitro-glycerine, the employment of which as such is, of course, extremely dangerous, into a gelatinous mass highly suitable as an explosive, which, even under very high pressure, does not disengage any nitro-glycerine, does not alter its character in water, and possesses twice the destructive force of dynamite No. 1. As this new material is only some 50 or 60 per cent. more costly than dynamite No. 1, its wide application may be considered probable. This material, known from its peculiar appearance as gelatinized dynamite, possesses the property of becoming greatly reduced in its explosive force by the addition of certain substances, until it cannot be exploded even under the action of rifle balls fired from a distance of 25 yards, so that it may be employed even as charges for heavy guns and torpedoes without the danger of explosion from any adjacent mine. In that it appears to combine all the advantages of compressed gun-cotton as a war material, without its drawbacks, experiments with it have been made under the superintendence of Captain P. Hess, of the Royal and Imperial Ministry of War, and of M. J. Trauzl, with some of the new material manufactured by Messrs. Maehlar & Eschenbacher, of Vienna, whose product contains:

Nitro-glycerine	86.40
Soluble gun-cotton	9.60
Camphor	4.00
Total	100.00

According to *Engineering*, the following are the experiments made:

Experiment A.—Two small pieces of gelatine dynamite were kept under water for 12 days. They lost no weight, nor was their consistence changed during this time. No traces of nitro-glycerine were evolved from the mass, and the upper surface became covered with a hard white film. This extended to a depth of .19 in. but it disappeared after the sample had been left to dry for 24 hours. The destructive force remained unaltered.

Experiment B.—A small cube of gelatine dynamite, measuring .39 in. on a side, was subjected over a period of three hours to a pressure of 2 tons. No traces of exudation were visible, and as soon as the pressure was removed the cube returned to its original form.

Experiment C.—Six cubic inches of gelatine dynamite were piled upon an iron plate recipient measuring 3.9 in. by 3.9 in., .39 in. high. This was then placed on a plate .79 in. thick, and fired at by rifles with a range of 50 yards. No explosion occurred. A charge was then arranged exactly in the same manner behind a steel plate .12 in. thick on a piece of timber 1.03 in. thick. After 10 rounds had been fired without producing any effect the explosive was examined, and it was found that no nitro glycerine had been evolved. A small quantity of gelatine dynamite was placed under a 20 ton steam hammer. After six blows there was no explosion, but with two more the explosive began to burn quietly. The following test was then made: To a rail 14 ft. 9 in. long there was fixed in the middle of its length and close against the flange a sheet-iron box 2.56 in. long, containing 8.7 oz., and 6 ft. from this cartridge, on the opposite side of the flange, a similar cartridge was secured, and a third one containing ordinary dynamite was placed immediately opposite this latter. The central charge was fired first, and the ordinary dynamite cartridge exploded with the shock, while the gelatine dynamite cartridge, separated only by the thickness of the web of the rail, remained intact. On two iron plates, placed 7⅞ in. apart, were placed two lead boxes containing each 7 oz. of gelatine dynamite. One of these charges was exploded, breaking the plate on which it was attached; the adjacent charge was burnt without explosion.

Experiment D.—In an iron envelope was placed 1¾ oz. of the explosive, and an attempt was made to discharge it by means of a cap containing one gram of fulminate. The explosion of this cap tore the iron envelope and set the dynamite on fire, but without any explosion. A similar attempt was made with 7 oz. of gelatine dynamite, and a cartridge of No. 3 ordinary dynamite. The explosion set the former on fire, but it did not explode. Cartridges composed of 75 per cent. of nitro-glycerine and 25 per cent. of gun cotton used for discharging ordinary dynamite when frozen, did not effect a complete explosion of the charge, and it was necessary to produce a special firing cartridge for discharging the gelatine dynamite when frozen. This was arrived at by using extra powerful gun cotton saturated with nitro-glycerine. Such cartridges were found to develop the full power of the more dormant explosive. It may be mentioned here that by increasing or diminishing the amount of camphor in the gelatine dynamite its degree of sensibility can now be regulated at will.

The foregoing experiments were all carried out with the view of determining the comparative safety of the new explosive with ordinary dynamite. We may now pass on to consider another series having for their object the determination of its destructive force.

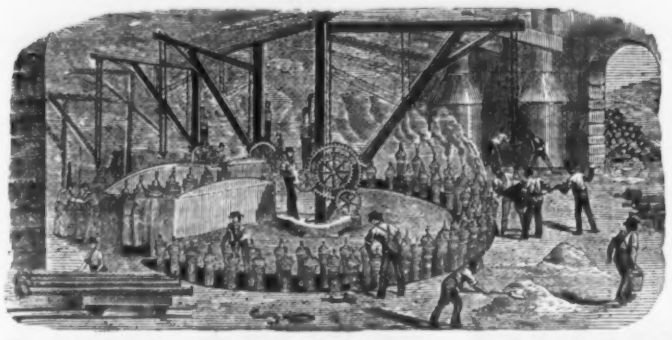
Experiment E.—An oak beam 11¾ in. by 9¾ in. and 57 in. long, placed on two bearings 39 in. apart, was broken up by the explosion of 1.5 lb. of gelatine dynamite; an iron plate 11¾ in. long 6¼ in. wide and 1 1-16 in. thick, placed on two supports 7⅞ in. apart, was broken into pieces by the explosion of 2.25 lb. of the explosive. A rail 3⅝ in. wide at the base, 5 3-16 in high and 2⅛ in. wide in the head, was broken into a thousand fragments by the explosion of .66 lb. of this material.

These experiments, executed by men so well known as Trauzl, will be accepted as proving conclusively that the new explosive is superior to dynamite in the following points: It may be preserved intact for a long time under water. It does not give off nitro-glycerine even under extreme pressure, nor is it affected by blows or shocks, nor even by explosions occurring very near it. It is not dangerous when brought near fire, but only burns slowly.

McNEALS & ARCHER,

BURLINGTON, N. J.

Flange Pipes.



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FOR WATER AND GAS.

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LIGHTNING HAY KNIVES,

WEYMOUTH'S PATENT.

This knife is the best in use for cutting down hay and straw in mow and stack, cutting fine feed from bale, cutting corn stalks for feed, cutting peat and ditching marches.

The blade is best cast steel, spring temper, easily sharpened, and is giving *universal* satisfaction. A few moments trial will show its merits, and parties once using it are unwilling to do without it. Its sales are fast increasing for export as well as home trade, and *seems destined* to take the place of all other Hay Knives.

They are nicely packed in boxes, one dozen each, of 50 lbs. weight, suitable for shipping by land or water to any part of the world.

Manufactured only by

Hiram Holt & Co.,

East Wilton, Franklin Co., Maine.

For sale by the Hardware Trade generally.

SEMPLE & BIRGE MFG. CO., Agents at St. Louis.

RICHARD P. PIM,

MANUFACTURER OF

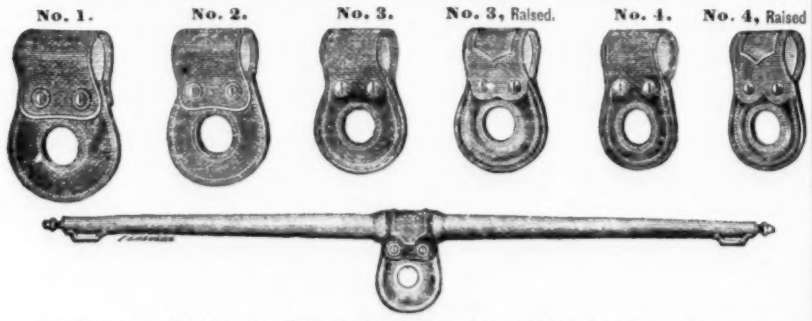
MALLEABLE AND GRAY IRON CASTINGS

For Car, Carriage and Tinsmiths' Hardware.

Corner Taylor and Buttonwood Streets, - WILMINGTON, DEL.

E. & J. C. COVERT, Sole Manufacturers,

Factory and Salesroom, FARMER VILLAGE, N. Y.



The above cuts illustrate the different styles of our Adjustable Neck-Yoke Leathers. Also the cheapest style of finished Yoke we manufacture. In advertising our goods we don't dwell on the point usually raised, *i. e.*, that we have the cheapest and best, but simply ask one trial. That being accomplished we have (according to our experience) a regular customer to add to our list that will use nothing else. Sample sent by mail on receipt of 65 cents. For full particulars send for illustrated catalogue and price list. For sale by all the principal jobbers in carriage goods at manufacturers' prices.

SILVER'S SAUSAGE STUFFERS

AND

Silver & Deming Family Sausage Stuffer and Fruit Press Combined.

Liberal Discounts to the trade. Manufactured by

SILVER & DEMING MFG. CO., Salem, Ohio.

Southern Advertisements.

Southern States Coal, Iron & Land Co.

LIMITED,

ENGINEERS, IRON FOUNDERS & BOILER MAKERS,

Coal Miners and Fire Brick Manufacturers.

The Only Makers in the Southern States of

WASHED FOUNDRY COKE,

Free from Slate and Sulphur.

Machine-Made Brick, Limestone, Lumber and Shingles.

FARMS TO LET.

Apply to the HEAD OFFICE, South Pittsburg, Tennessee.

W. A. HOSKINS,

DEALER IN

MINERAL LANDS,

Chattanooga, Tenn.

Offers for sale, at very low figures, some of the most valuable Charcoal and Coke Properties within the district. Full particulars furnished on application.

Vulcan Iron & Nail Works,

Chattanooga, Tenn.,

MANUFACTURERS OF

BAR IRON, NAILS, RAILROAD SPIKES, FISH BARS AND BOLTS BRIDGE AND CAR BOLTS, AND FORGINGS GENERALLY.

ROANE IRON COMPANY,

Manufacturers of and Dealers in

Pig and Railroad Iron.

CHATTANOOGA, - - - - TENN.

WASON CAR & FOUNDRY COMPANY,

Chattanooga, Tenn.,

Manufacturers of

RAILWAY FREIGHT CARS, Car Wheels and Castings.

TENN. COAL & RAILROAD COMPANY,

A. M. SHOOK, General Manager, - - Tracy City, Tenn.

Proprietors of the Sewanee mines, capacity of 50,000 bushels of coal and coke per day.
Several important institutions of learning, including the University of the South, also the celebrated Beersheba Springs, are located upon the line of this Railroad.
Being also the proprietors of several extensive tracts of very fine lands, offer special inducements to colonies. Communications addressed to the General Manager will receive prompt attention.

T. J. BROWN,

Rockwood, Tenn.

Miner and Contractor of Fossiliferous Ores.

A superior article delivered at low figures at any furnace within the district or at any point on the Ohio River. Refer to Roane Iron Co., Chattanooga Iron Co., or S. B. Lowe, Chattanooga.

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Pig Iron, Storage & Commission.

Dealer in Charcoal and Coke Pig Iron for Foundry, Forge or Car Wheel purposes.

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MANUFACTURERS OF

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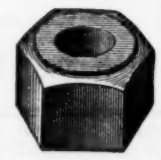

R. R. FISH BARS,

BOLTS,

SPIKES,

RIVETS, &c.

IRON AND STEEL DROP FORGINGS

All shapes, small and large, including

Gun, Pistol, Wrench Bars, &c. Also, Die Sinking. Manufacturers also of Bricklayers', Moulders' and Plasterers' Tools, Saddlers' Round and Head Knives.

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THE SANDUSKY TOOL CO.,

Sandusky,

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SOLE

MANUFACTURERS OF

Schwehr's Patent Forged, Oil Tempered Planter and German Pattern Hoes.

Warranted the strongest and best goods made.

GRAHAM & HAINES, General Agents,

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WHITEHEAD BROS.,

Office and Retail Yard, 517 WEST 15TH STREET, NEW YORK. Dealers in all grades of NEW JERSEY, NORTH RIVER, CRESCENT AND ALBANY

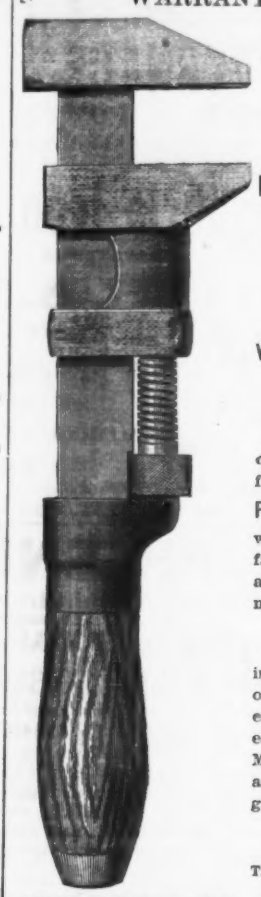
MOULDING SANDS.

Also FIRE SAND, FIRE CLAY, KAOLIN and all kinds of

FOUNDRY FACINGS.

TRADE STANDARD GIRARD WRENCH. MARK.

WARRANTED.



FOR **STRENGTH** AND **Durability** IT HAS NO SUPERIOR.

GUARANTEED IN EVERY RESPECT.

Wrought Bar, Head and Screw.

Owing to the *increased demand* for these justly Popular Wrenches, we are now manufacturing more than any other establishment in the world.

Our Wrench having been imitated by other manufacturers, we have adopted the above Trade Mark, and will hereafter stamp all our goods.

SEND FOR TERMS and PRICES.

GIRARD WRENCH MFG. CO., Girard, Pa.

AGATE IRON-WARE

PATENTED

May 30th, 1876, Feb. 27th, 1877, July 3d, 1877.

☞ The absolute Purity and Safety of Agate-Iron-Ware is certified to by the following eminent Chemists:

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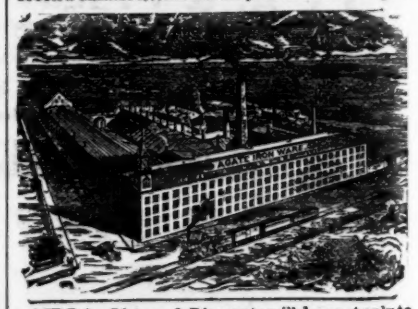
B. SILLIMAN, State Chemist, Yale College, New Haven, Conn.
HERBERT G. TORREY, U. S. Assayer, Office, 20 Wall St. N. Y.
S. C. EATON, M. D., Analytical Chemist at U. S. Assay Office.
S. DANA HAYES, State Assayer and Chemist, Boston, Mass.
HENRY MORTON, Pres. Stevens Ins. of Technology, Hoboken, N.J.
EDW'D. S. WOOD, Prof. Chem., Harvard Med. Coll., Boston, Mass.
WM. RIPLEY NICHOLS, Professor Gen. Chemistry, Boston, Mass.
BOOTH & GARRETT, Practical & Analytical Chemists, Philadelphia



☞ Price Lists and Discounts will be sent only to the Trade, on application.

LALANCE & GROSJEAN MF'G CO.,
P.O. Box 301. 89 Beekman St., New York.

WEEKS'

Grape & Fruit Picker.

An Indispensable Article for Picking Choice Fruit.

With this tool choice grapes and other fruit can be detached from the branches and deposited in the receptacle for receiving them without touching them with the hands.

A. A. WEEKS,

Sole Manufacturer,

82 John Street, New York.

China as a Market for American Metals and Metal Goods.

The State Department has received the following from the Consul at Amoy, in continuation of his report on commerce:

The fourth class of goods on the list of foreign imports to China is that of metals, among which iron is the most important. The trade in this article seems to be on the increase, but I am inclined to the opinion that it will not many years continue so. The mountains of China are full of iron ore, and in many places it is, and for ages past has been, worked successfully, though in a rude way. When modern appliances and machinery for working the ore to better advantage have been adopted and the means of transportation from the interior have been improved, foreign iron, unmanufactured, will no longer be able to compete with that from the native mines. Even now, with all its disadvantages, native pig iron from the interior can be laid down at Amoy at about 2¼ cents per pound. Our chief present advantage, if we have any in this line, consists in our superior facilities for manufacturing some of the utensils composed of iron which are required by the Chinese, and no doubt this will continue with us for many years to come. Take, for example, the iron pan, that indispensable culinary implement used throughout China for boiling sugar, cooking rice, sweet potatoes, in fact, everything. Perfectly round on the bottom and spreading rapidly to the rim, it exposes the largest possible surface to a scanty and economical fire. There are some 14 different sizes of these pans, varying from 4 feet 8 to 1 foot 8 inches in diameter at the top. Large quantities are made at the cities of Changchow and Wahai and Chin Chew to the west and eastward of Amoy, and a few at this port, for local use and shipment to other Chinese ports, Formosa, Manila and the Straits. They are composed chiefly of native iron from the interior of the Fairkien Province. I have thought this matter of iron pans sufficiently important to justify me in sending a nest of samples to the Department of State, and shall do so by the first tea steamer leaving this for New York. I append a statement of weights, dimensions, prices, &c., of the different sizes.

No. 1, iron pan, 4 ft. 8 in. in diameter, cost, $11 each; weight, 190 catties.* Used for boiling sugar, and must be good metal to stand fierce fires. The demand for these is comparatively limited.

No. 2, 4 ft. 2 in. diameter; cost, $5; weight 86 catties. Same use as No. 1; demand also limited.

No. 3, 3 ft. 6 in. diameter; cost, $3; weight, 54 catties. Important; exported to Seagon, Rangoon, Bangkok and Formosa.

No. 4, 2 ft. 8 in. diameter; cost, $1. Used for culinary purposes, and in Singapore for making gambier. Also largely exported to Manila, Straits and Formosa.

Nos. 5, 2 ft. 6 in.; 6, 2 ft. 4 in.; 7, 2 ft. 1 in.; 8, 1 ft. 8 in.; costing respectively 65, 55, 36, and 30 cents. Cooking pans; important for home use and exportation.

No. 9, with handle; cost, 22 cents. Not much used.

Nos. 10, 11, 12, with handle; cost, 16, 15, and 13 cents. Vegetables, rice, &c.; important for home and export.

No. 13, with handle, costing 12 cents; little used.

No. 14, with handle; cost, 8 cents. Exported in large quantities to Manila for use in boiling paints, &c., &c.

Although I have sent a complete set, it will be seen that only Nos. 3, 8, 10, 12 and 14 are worth attention.

Castings for native plows are also made in great numbers at Amoy and neighboring non-treaty ports for home use and shipment to Straits settlements, Manila and Formosa. I also send samples of these castings, with one stocked ready for use. While I would by no means recommend the manufacture of Chinese plows complete by the people of the United States, I think it probable these cast mold boards and shears can be made better and cheaper in the United States than here. The Chinese do not object to better and cheaper articles of kinds they are accustomed to simply on account of their foreign make, but owing to their stubborn conservatism they will often refuse a much better article of foreign manufacture when slightly different from their own so long as the latter will at all answer the purpose, so that in many things and plans among them, it is probably better for the present to excel them in the quality and cheapness of their articles than attempt the introduction of our own better but different styles and models.

Most of the samples I send are of castings for the one-horse plows used in the small "patches" of the hilly country of the Fairkien Province. In the wild fields of Formosa and other level sections the larger sizes are used, and two or even sometimes three buffaloes are required to draw them.

The present prices of iron are as follows at Amoy:

Iron, nail rod, foreign, $3 per picul; iron, bar, foreign, $5 per picul; iron wire, foreign, no quotation; pig iron, foreign, $2 per picul; pig iron, native, $3 per picul; pig iron, wrought, native, $3.20 per picul; steel, native, $5 at $5.50 per picul.

If samples of American iron were kept on exhibition at the various ports of China, I have no doubt but a large trade would soon be built up. Everything that goes to make up cargoes of American goods for China helps to reduce the balance of trade against us and turn the scale in our favor. No opportunity should be lost to help along a consummation so devoutly to be wished.

LEAD.

Lead in pigs is the next item of importance to the United States in the list of metals imported to China. It seems strange that not until very recently was the discovery made that the surplus lead produced in the silver mines of Nevada, hitherto regarded as of little value for want of a market, could be sent to China at a profit and yet sold at a figure far below the current price of European lead. The quantity required annually for lining tea boxes and the various pewter utensils of ornament and use entering into the Chinese domestic economy, is not far from 180,000 piculs. A discovery of such importance as the one I have referred to must exercise a material influence on cargoes and freights to China not only from London and San Francisco, but even from New York, and it is to be hoped will assist in starting a much-needed line of fast freight steamers from the latter port to China via Suez direct. Present prices are as follows: L. B., $6.50 per picul; ordinary brands, $6.30; American $6.20.

*The catty is equal to 1⅓ lbs.

The Rothschild Chateau.

A writer in *Frazer's Magazine*, who has called on Baron Rothschild, thus describes his house:

We prepare ourselves to be dazzled with gold and gems, to tread on carpets gorgeous as peacocks' tails, softer than eider down; we pass through jasper and porphyry columns into regal halls where the acme of splendor can go no further; where the walls are hung with tapestry and crimson satin, where every chair looks like a throne, and where on all sides the mirrors reflect the treasures collected from all parts of the world. And we are not disappointed. Quitting the railway at the cheerful, wealthy little town of Lagny, we drive past handsome country houses and well-kept flower gardens, and then gradually ascend a road winding amid hill and valley up to the chateau, a graceful structure in white marble, or so it seems, proudly commanding the wide landscape. The flower gardens are a blaze of colors, and the orange trees give delicious fragrance as we ascend the terrace—ascend, indeed, being hardly the word applicable to steps sloping so easily upward, and so nicely adjusted to human foot that climbing Mont Blanc under the same circumstances could be accomplished without fatigue. It is impossible to give any idea of the different kinds of magnificence that greet us on every side. Now a little Watteau world in tapestries, having for a background sky-blue satin and roses; now a dining hall, somber, gorgeous and majestic as that of a Spanish palace; now we are transported to Persia, China and Japan; next we find ourselves amid unspeakable treasures of Italian and other marbles. To come down to practical details it might be suggested to the generous owner of this noble treasure house of art that the briefest possible catalogue of his choicest treasures would unspeakably oblige his visitors. There is hardly a piece of furniture that is not interesting, alike from a historic and artistic point of view, while some are *chefs d'œuvre* both in design and execution, and dazzlingly rich in material. Among these may be mentioned a pair of chimney ornaments, thickly hung with pendants of precious stones; a piano—which belonged to Marie Antoinette—the case of which is formed of tortoise-shell, richly decorated with gold; a cabinet set with emeralds, sapphires and other jewels; another composed of various precious stones; chairs and couches covered with exquisite tapestry of the Louis Quinze period; some rare specimens of old *cloisonné* work, also of Florentine mosaics—these forming a small part of this magnificent museum. The striking feature is the great quantity and variety of rich marbles in every part. One of the stair cases is entirely formed of different kinds of rare marble, the effect being extraordinarily imposing. Elsewhere a room is divided by Corinthian columns of jasper and porphyry, and on every side is displayed a wealth and splendor in this respect quite unique. Without doubt, nothing lends such magnificence to interiors as marbles, but they require the spaciousness and princeliness of such a chateau as this to be displayed to advantage. Next in importance, as a matter of mere decoration, must be cited the tapestries, of which there is a rare and valuable collection, chiefly in the hall, so called, and where they are arranged about the running gallery surmounting the pictures. What this hall must be worth would perhaps sound fabulous on paper. It is here that some of the most precious cabinets are found—treasures of ivory, ebony, gems, gold and silver—and the pictures alone represent a princess' dowry. Examples of some of the great masters are here—Velasquez, Rembrandt, Rubens, Claude Lorraine, Bordone, Reynolds—lastly, among moderns, Ingres and Hippolyte Flandrin. Much might be said about the pictures if space permitted, but they alone are worth making the journey from Paris to see. But the *crême de la crême* of Baron Rothschild's treasure is not to be found in this sumptuous hall, in spite of tapestries, pictures, marbles and rare furniture, nor in the state *salon*, but in one of the dining rooms, a marvelously rich and gorgeous apartment, where the wealth of gold and splendid colors is toned down, and the eye is rather refreshed than dazzled by the whole. On the walls, reached from base to ceiling, are hung a series of six paintings on leather, known as the *cuirs de Cordove*, or leather paintings from Cordova. They are historical and allegorical subjects, and are painted in rich colors with a great abundance of gold on a brown background, the general effect being that of a study in gold and brown. When looked at narrowly we find great dramatic interest in the subjects and a uniform masterliness of execution, but without a catalogue it is impossible to give any accurate idea of these gorgeous paintings. The entire department of Seine et Marne perhaps offers no greater rarity than these paintings on leather from Cordova, of which we would fain know the history.

The French seem to be quick in recognizing the merits of a substance for decorative purposes. They are now making jewelry from nickel ore. The ore from the famous New Caledonia nickel mines has recently been put on the market under the name noumécite, in the shape of brooches, earrings &c. It is greyish green, and has been extensively used by Christofle & Co.

On the 21st inst. a fatal explosion occurred in the coal mine of Handford Brothers at Sullivan, 25 miles south of Terre Haute, Ind., caused by the ignition of gas by blasting. Eight men were killed and two seriously wounded.

USE THE BEST.

NEW

AMERICAN FILE COMPANY.

THE NEW AMERICAN FILE COMPANY have the exclusive right to use the Bernot process for cutting Files. By this method all the advantages of hand cutting are secured, together with an accuracy unattainable in hand work. They are the only manufacturers who employ machinery for testing Files and Steel.

NEW AMERICAN FILE CO., Pawtucket, R. I.

AUBURN FILE WORKS,

Superior Hand-Cut

FILES AND RASPS,

MADE FROM IMPORTED STEEL. EVERY FILE WARRANTED.

FULLER BROS., Sole Agents,

89 Chambers and 71 Reade Streets, N. Y

Granted for

McCAFFREY & BRO.,

Pennsylvania File Works,

Fourth St., north of Columbia Ave., Philadelphia, Pa., U. S.

Superior Goods.

Silver Medal. Highest Premium.

Domestic and foreign buyers who are desirous of handling a superior File or Rasp should send us their orders. Gentlemen visiting the Exhibition Universelle in Paris are invited to examine our exhibit at D 3. American Section.

Steam and Frost prevented on Show Windows.

REVOLVING VENTILATORS

For everything (and every size), from a hat or cap to an exhibition building.

Kitchens, Laundries, &c., ventilated without draft. Durable, strong, without rivets or solder. Oiled for six months. Each one has storm cap. Retail price, size six inch diameter, $1.00 and upwards; apparatus with which any one can cut circles in glass, 15 cents each.

Protective Ventilators avoid drafts, exclude dust, dampness, malaria and germs of disease; adopted by hospitals, schools, institutions, &c.; applied to any window or room.

Prof. A. L. Loomis, M. D., University of City of New York, writes as follows:

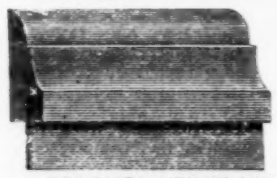
"From my personal experience and that of my patients who have used your Ventilator during the past six months, I am convinced that your method of removing dust, impurities and dampness from the atmosphere is the best which has as yet been proposed. By it the air in an apartment can be constantly changed without causing drafts. I would especially recommend its adoption in sick rooms, sleeping apartments, nurseries and school rooms."

Air Filters and Moisteners, placed over hot-air registers of furnaces, &c., prevent dust and supply *steam filtered air.* Prices and discounts to the trade sent on application.

The "**Economy**" Molding Weather Strip is perfect in every respect. By enlarging edge of rubber or felt, and making slot in molding to correspond (see engraving), we save all *after expense* of molding. Once purchased it will last a lifetime, because rubber, etc., has only to be removed by taking old piece out of either end of molding, and sliding in a new piece. By this method of securing rubber all uncertainty of *fastening or undoing* of glue or tacks is overcome.

Rubber supplied with enlarged edge and instructions to enable Car Manufacturers, Carpenters, Builders and far off trade to make slots in Sashes, Doors, Moldings, &c., and thus make perfect Weather Strips.

No. 6.



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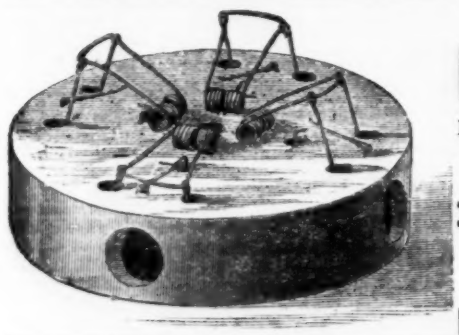

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MOUSE TRAPS,

For Home and Export Trade.

BEST IN MARKET.

RIPLEY MFG. CO.

Unionville, Ct., U. S. A.,

Manufacturers of

House Furnishing Hardware.

Romer & Co.

Established 1837.

Manufacturers of Patent Scandinavian or Jail Locks. Brass Pad Locks for Railroads and Switches. Also Patent Stationary R. R. Car Door Locks. Patent Piano and Sewing Machine Locks.

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MACHINE MOULDED MILL GEARING,

AS ACCURATE AS CUT GEARING

AND MORE DURABLE IN USE.

Saves Time and Expensive Patterns,

SHAFTING, PULLEYS AND HANGERS,

A SPECIALTY,

LEFFEL TURBINE WATER WHEELS,

STEAM ENGINES AND BOILERS,

MIXERS FOR FERTILIZERS AND CHEMICALS.

POOLE & HUNT, Baltimore.

FILES & RASPS,

Established 1868.

Best Cast Steel.

HAND-CUT. Manufactured by

JOHNSON & BRO.

No. 1 Commercial Street, Newark, N. J.

ESTABLISHED 1860.

Chas. Spruce & Co.,

Manufacturers of **HAND CUT**

FILES AND RASPS.

Every File warranted.

CHALMERS & MURRAY,

Sole Agents, 76 Reade St., New York.

SPENCER & UNDERHILL,

94 Chambers St., N. Y., Agents for

American Screw Co.'s Wood, Machine and Rail Screws, Stove and Tire Bolts, Rivets, &c.

O. Ames & Sons, Shovels, Spades and Scoops.

A. Field & Son, Tacks, Brads, Nails, &c.

G. F. Warner & Co., Carriage Clamps.

We have also on hand a general assortment of Hardware

THE GIANT PAD LOCK.

Manufactured by

THE SMITH & EGGE MFG. CO.

(Centennial Award.)

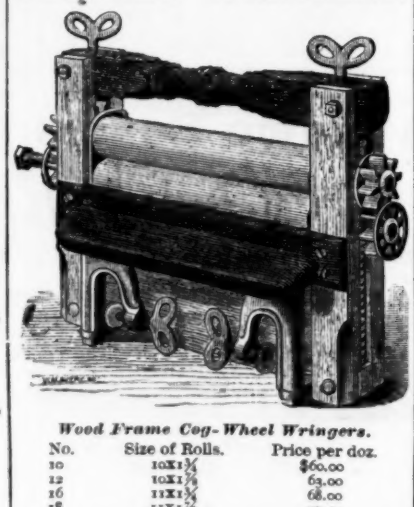
"Superior in Every Respect."

This is one of the **best selling Locks** in the market, and affords the dealer a large profit. It is thoroughly and strongly made—of the best material—very handsome in appearance, and every Lock is warranted.

Orders solicited. Address as above

Lock Box 105, Bridgeport, Conn.

Keystone CLOTHES WRINGERS.



Wood Frame Cog-Wheel Wringers.

No.	Size of Rolls.	Price per doz.
10	10X1¾	$60.00
12	10X1⅞	63.00
16	11X1¾	68.00
18	11X1⅞	71.00

Wood Frame Friction Wringers.

No.	Size of Rolls.	Price per doz.
1½	10X1⅝	$51.00
1	10X1¾	54.00
3	11X1¾	62.00

Self-Adjusting Iron Frame Friction Wringers.

No.	Size of Rolls.	Price per doz.
2½	10X1⅝	51.00
2	10X1¾	54.00
4	11X1¾	62.00

EVERY WRINGER WARRANTED.

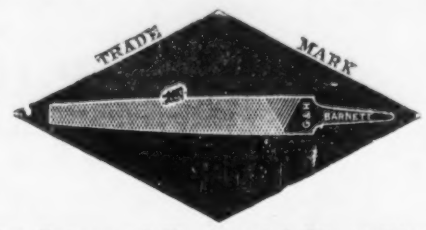
☞ Special rates given for export.

Send for price list of other goods for home and export trade.

F. F. ADAMS & CO.,

Erie, Pa.

Black Diamond File Works.



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39, 41 & 43 Richmond St., Philadelphia.

CHARLES B. PAUL,

Manufacturer of HAND CUT FILES.

Warranted **CAST STEEL.** **187 Tenth Street, Williamsburgh, New York.**

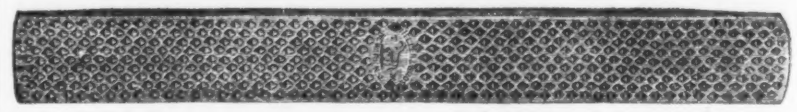
All descriptions of Files made to order. Price List mailed on application. **Established 1860.**

HELLER & BROS.,

MANUFACTURERS OF CELEBRATED

AMERICAN HORSE RASPS AND FILES,

NEWARK, N. J.



In view of the many so-called improvements and ingenious arrangements of the teeth of Horse Rasps made within the last few years, we take occasion to recommend our own Horse Rasps, made of the best American Steel, all **hand cut** in the **old style** by the most skilled mechanics; and we guarantee them to be unequaled in the market, as is best evinced by the unanimous verdict of all the skilled horseshoers who are using them for the last fifteen years all through the United States.

For sale by the leading Hardware and Iron Dealers in the United States and Canada.

AUSABLE HORSE NAILS

POLISHED OR BLUED.

HAMMERED AND FINISHED

The Ausable Nails

Are Hammered Hot,

And the Finishing and Pointing are Done Cold,

Thus Imitating the Process of Making Nails by Hand.

Quality is **Fully Guaranteed.**

For Sale by all Leading Iron and Hardware Houses.

ABRAHAM BUSSING, Secretary,

4 Warren Street, New York.

The only **GENUINE D. R. BARTON** Tools

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AXLES ON GERMAN RAILROADS.

From a report by the German Railroad Union, embracing 24 railroad administrations, we gather the following data on the breakage of axles for the year 1876: Of 7087 locomotives, 6054 tenders and 177,122 cars, one axle broke to every 590 locomotives, 242 tenders and 2725 cars, the average life of the broken axles and the average distance run before breaking being, respectively, 11 years and 162,854 miles for locomotives, 15 years 9 months and 166,373 miles for tenders, 17 years 7 months and 342,737 miles for passenger cars, and 13 years 6 months and 109,664 miles, respectively, for freight cars. The committee's report gives the name of the manufacturer of each broken axle, its material (wrought iron, puddled steel, Bessemer steel or cast steel) and the cause of breakage when known. From this it appears that 74 of the 102 broken axles were of wrought iron, 9 of puddled steel, 4 of Bessemer steel and 15 of cast steel. The proportion of steel and iron axles in use unfortunately is not given, but the committee say: "When we take into consideration that of late years most of the roads have used steel axles only for new rolling stock and renewals of old, and that they now form certainly a very large proportion of the whole number in use; further, that the axles of the new cars are much more heavily loaded, and, finally, that the manufacture of steel axles has had to be developed and perfected, and that many of the breakages of axles of that material were due to the faults of the period of development, we are justified in drawing a conclusion from the small number of failures of such axles favorable to the fitness of steel for axles." Of the 102 cases of breakages, 42 were in trains going at full speed, 36 at reduced speed, 24 while stopping—the latter being mostly in consequence of hot journals. In former years the result has been quite similar. The place of the fracture was in 57 cases in the journal, in two outside of the wheel seat, in 25 inside of the wheel seat, in 10 in the wheel seat and in 8 about the middle of the axle. Three of the axles were broken in more than one place. A general statement of the causes of the breakages attributes 41 of the 102 to "ordinary wear," 30 to bad material and manufacture, 21 to hot journals, 5 to bad construction (sharp angles and insufficient dimensions), and the other 5 to various causes. "This table," say the committee, "teaches further that the greater part of the breakages could have been avoided, either by the selection of a better material, by efforts to avoid hot journals and by the timely cutting out of the cars with hot boxes, as also by a more careful inspection of the axles for cracks." The committee also say: "It must be mentioned here that roads which give premiums for discovering cracks in axles have shown the best results, and the general introduction of the practice of giving such premiums is strongly to be recommended." One railroad gave 72 such premiums in 1876 and 99 in 1877, and that road—which is one of the most important in Austria—had no axles broken under cars while running, and consequently no accidents from broken axles.

THE GODFREY-HOWSON PUDDLING FURNACE IN FRANCE.

The following data on the work of the Godfrey-Howson rotary puddling furnace in France have been given by Mr. R. Howson, one of the inventors of the furnace, to the Institute of North Straffordshire Mining and Mechanical Engineers. At the Tamaris Works of the Terrenoire Company, M. Escalle, a well-known French metallurgist, reports that a pig iron holding only about 0.5 per cent. of silicon and a similar amount of phosphorus, taken direct from the blast furnace, did not require more than 25 minutes, and that the amount of phosphorus removed was greater than he, M. Escalle had ever experienced. Similarly, the experiments at the works of Messrs. de Wendell at Hayange were satisfactory. On the other hand, fairly good bar only, holding as much as 30 per cent. of phosphorus, was produced from pig with 1.70 per cent. at the works of Dupont & Fould, Pompey. This Mr. Howson attributes to the high percentage of silicon, 1.4 per cent., which he claims renders phosphoric pig unfit for puddling. At Fourchambault the balls as they came from the furnace were hammered into solid homogeneous blooms, which were at once heated and rolled into finished bars direct and without piling. The pig, holding only .27 per cent. of phosphorus but 3.0 per cent. of silicon, was puddled in a half-hour heat.

The *Bulletin* of the American Iron and Steel Association makes the following statement in reference to some recent experiments with the Chapin and the Brady's Bend processes. Some time last summer considerable mention was made in the newspapers of a new process of puddling, the invention of a Rev. Dr. Chapin, of Ohio. The process has recently been tested by practical men, and almost every trial resulted in a chill, while none gave satisfactory results. It is no doubt a complete failure. A new method of making steel by a direct process was also heralded far and wide last summer as having been set in motion at an abandoned furnace at Brady's Bend, Pennsylvania. The enterprise has entirely collapsed, the sheriff having appeared on the ground with a very old process of his own. We need scarcely add that no steel was made.

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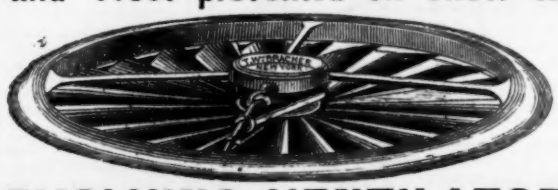

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Protective Ventilators avoid drafts, exclude dust, dampness, malaria and germs of disease; adopted by hospitals, schools, institutions, &c.; applied to any window or room.

Prof. A. L. Loomis, M. D., University of City of New York, writes as follows:

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Rubber supplied with enlarged edge and instructions to enable Car Manufacturers, Carpenters, Builders and far off trade to make slots in Sashes, Doors, Moldings, &c., and thus make perfect Weather Strips.

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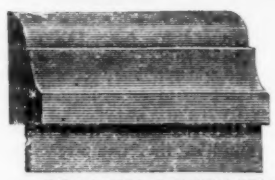

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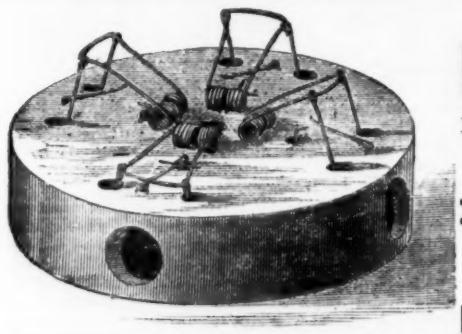

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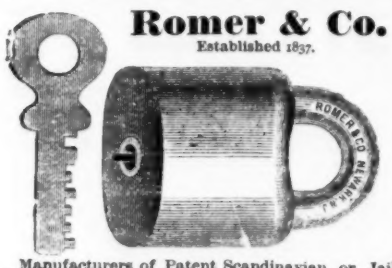

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Saves Time and Expensive Patterns,

SHAFTING, PULLEYS AND HANGERS,

A SPECIALTY,

LEFFEL TURBINE WATER WHEELS,

STEAM ENGINES AND BOILERS,

MIXERS FOR FERTILIZERS AND CHEMICALS.

POOLE & HUNT, Baltimore.

FILES & RASPS,

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Best Cast Steel.

HAND-CUT. Manufactured by

JOHNSON & BRO.

No. 1 Commercial Street, Newark, N. J.

ESTABLISHED 1860.

Chas. Spruce & Co.,

Manufacturers of HAND CUT

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Every File warranted.

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We have also on hand a general assortment of Hardware

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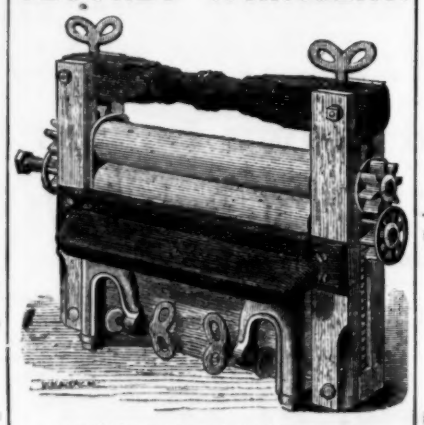

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EVERY WRINGER WARRANTED.

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F. F. ADAMS & CO.,

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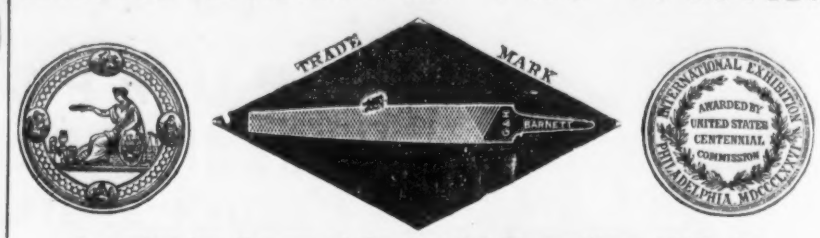
Black Diamond File Works.



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In the March number of *The Metallurgical Review*, W. B. Caldwell, Jr., of Louisville, Ky., published the method adopted by Prof. Finkener, of Berlin, together with some modification made in the laboratory of J. Lawrence Smith. The *Ber. d. Chem. Gesell* gives some additional details of Prof. Finkener's method. He dissolves the iron in hydrochloric acid of 1.4 spec. grav., evaporates to dryness in a porcelain crucible, heats to 200° to 250° C., dissolves in strong hydrochloric acid and filters. He precipitates with a molybdic acid solution holding 33 grams molybdic acid, 141 grams nitric acid and 19.4 grams of ammonia in one liter. The volume of the precipitating solution must be at least four times that of the phosphorus solution, only two-thirds being decomposed by the existing phosphoric acid. For every 100 c. c. of the mixture 25 grams of nitrate of ammonia must be dissolved in it. The precipitate is washed with a 20 per cent. solution of nitrate of ammonia, with which in the beginning nitric acid to the amount of one-thirtieth in volume of nitric acid has been added. In order to convert the precipitate into a weighable compound, the greater part of the contents of the filter is transferred to a weighed porcelain crucible. The portions adhering to the filter are dissolved with dilute warm ammonia, which is concentrated. An excess of nitric acid is added, and the mass is then brought into the porcelain crucible, where the liquid is evaporated and the nitrate of ammonia is removed by careful heating over a flame cooled with wire gauze. This does not decompose the phospho-molybdate of ammonia, the water of crystallization only being driven off. The residue attracts moisture readily, and must therefore be rapidly weighed. A second addition of nitrate of ammonia, &c., changes the weight but very little—about only 0.1 of 1 per cent. The precipitate contains 72 MoO_3 $(9-x)$, Am_2O+x H_2O for 3 P_2O_5. In calculating the percentage of phosphorus, x may be assumed to be $x=1$. Then the precipitate contains 3.794 per cent. P_2O_5. If arsenic acid is present it enters the precipitate; the latter is then dissolved in ammonia and the solution saturated with pure sulphuretted hydrogen. Then an addition of sulphur dissolved in sulphide of sodium is made, the solution is warmed, precipitated with hydrochloric acid, the filtrate boiled down and precipitated again with molybdic acid. Chloride of iron and soluble silica are stated to be without any injurious effect.

AXLES ON GERMAN RAILROADS.

From a report by the German Railroad Union, embracing 24 railroad administrations, we gather the following data on the breakage of axles for the year 1876: Of 7087 locomotives, 6054 tenders and 177,122 cars, one axle broke to every 590 locomotives, 242 tenders and 2725 cars, the average life of the broken axles and the average distance run before breaking being, respectively, 11 years and 162,854 miles for locomotives, 15 years 9 months and 166,373 miles for tenders, 17 years 7 months and 342,737 miles for passenger cars, and 13 years 6 months and 109,664 miles, respectively, for freight cars. The committee's report gives the name of the manufacturer of each broken axle, its material (wrought iron, puddled steel, Bessemer steel or cast steel) and the cause of breakage when known. From this it appears that 74 of the 102 broken axles were of wrought iron, 9 of puddled steel, 4 of Bessemer steel and 15 of cast steel. The proportion of steel and iron axles in use unfortunately is not given, but the committee say: "When we take into consideration that of late years most of the roads have used steel axles only for new rolling stock and renewals of old, and that they now form certainly a very large proportion of the whole number in use; further, that the axles of the new cars are much more heavily loaded, and, finally, that the manufacture of steel axles has had to be developed and perfected, and that many of the breakages of axles of that material were due to the faults of the period of development, we are justified in drawing a conclusion from the small number of failures of such axles favorable to the fitness of steel for axles." Of the 102 cases of breakages, 42 were in trains going at full speed, 36 at reduced speed, 24 while stopping—the latter being mostly in consequence of hot journals. In former years the result has been quite similar. The place of the fracture was in 57 cases in the journal, in two outside of the wheel seat, in 25 inside of the wheel seat, in 10 in the wheel seat and in 8 about the middle of the axle. Three of the axles were broken in more than one place. A general statement of the causes of the breakages attributes 41 of the 102 to "ordinary wear," 30 to bad material and manufacture, 21 to hot journals, 5 to bad construction (sharp angles and insufficient dimensions), and the other 5 to various causes. "This table," say the committee, "teaches further that the greater part of the breakages could have been avoided, either by the selection of a better material, by efforts to avoid hot journals and by the timely cutting out of the cars with hot boxes, as also by a more careful inspection of the axles for cracks." The committee also say: "It must be mentioned here that roads which give premiums for discovering cracks in axles have shown the best results, and the general introduction of the practice of giving such premiums is strongly to be recommended." One railroad gave 72 such premiums in 1876 and 99 in 1877, and that road—which is one of the most important in Austria—had no axles broken under cars while running, and consequently no accidents from broken axles.

THE GODFREY-HOWSON PUDDLING FURNACE IN FRANCE.

The following data on the work of the Godfrey-Howson rotary puddling furnace in France have been given by Mr. R. Howson, one of the inventors of the furnace, to the Institute of North Straffordshire Mining and Mechanical Engineers. At the Tamaris Works of the Terrenoire Company, M. Escalle, a well-known French metallurgist, reports that a pig iron holding only about 0.5 per cent. of silicon and a similar amount of phosphorus, taken direct from the blast furnace, did not require more than 25 minutes, and that the amount of phosphorus removed was greater than he, M. Escalle had ever experienced. Similarly, the experiments at the works of Messrs. de Wendell at Hayange were satisfactory. On the other hand, fairly good bar only, holding as much as 30 per cent. of phosphorus, was produced from pig with 1.70 per cent. at the works of Dupont & Fould, Pompey. This Mr. Howson attributes to the high percentage of silicon, 1.4 per cent., which he claims renders phosphoric pig unfit for puddling. At Fourchambault the balls as they came from the furnace were hammered into solid homogeneous blooms, which were at once heated and rolled into finished bars direct and without piling. The pig, holding only .27 per cent. of phosphorus but 3.0 per cent. of silicon, was puddled in a half-hour heat.

The *Bulletin* of the American Iron and Steel Association makes the following statement in reference to some recent experiments with the Chapin and the Brady's Bend processes. Some time last summer considerable mention was made in the newspapers of a new process of puddling, the invention of a Rev. Dr. Chapin, of Ohio. The process has recently been tested by practical men, and almost every trial resulted in a chill, while none gave satisfactory results. It is no doubt a complete failure. A new method of making steel by a direct process was also heralded far and wide last summer as having been set in motion at an abandoned furnace at Brady's Bend, Pennsylvania. The enterprise has entirely collapsed, the sheriff having appeared on the ground with a very old process of his own. We need scarcely add that no steel was made.

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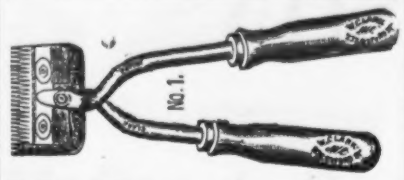

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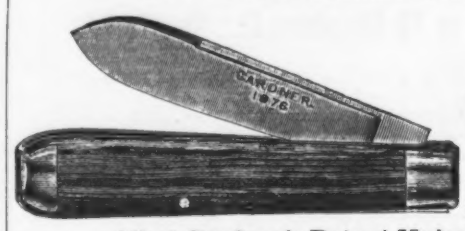

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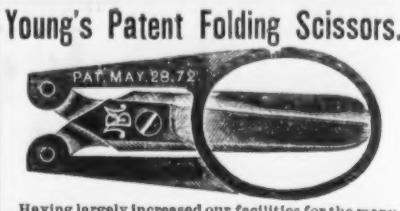

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The undersigned, in view of the **Paris Exhibition** of 1878, begs to inform his friends that he continues to make translations of Catalogues, Prices-current, Circulars, Correspondence, &c., from and into the

ENGLISH,
FRENCH,
GERMAN
and **SPANISH,**

and that he bestows special attention upon a strictly correct rendering of **Technical Expressions** in matters relating to **Machinery, Metallurgy, Hydraulics,** &c The very best reference will be furnished from leading manufacturers in this city, Philadelphia and elsewhere, for whom he has translated. If desired, estimates will be procured for the setting up, electrotyping and printing of catalogues, &c., in the above languages.

C. KIRCHHOFF,
Metal Reporter of The Iron Age,
83 Reade St., New York.

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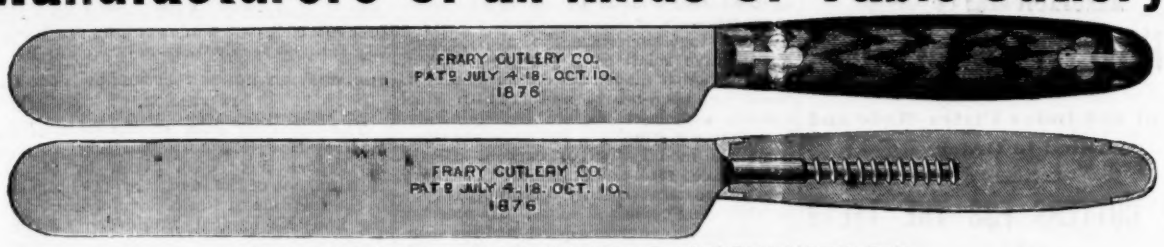

The above Illustrations represent their New Patent Screw Tang Lock Fast Solid Handle Knife.

There is no question but that a solid handle Knife is much more preferable than a scale tang. The great objection to their use hitherto is, that no solid wood handle has been placed on the market with the handle properly secured—no handle put on with cement will stand the wear and tear of every day usage. The cement will expand and contract with the action of heat and cold, and become loose, crack and come off, causing great prejudice against their use. This objection is overcome in our patent screw tang. A wood screw is welded to the tang of the Knife or Fork, and screwed firmly and securely in the handle and locked there by the bolster, making a very strong neat and handsome knife, which we warrant never to get loose, crack or come off. We manufacture a large variety of patterns, both Table, Butchers and Carvers, and furnish the patent handle nearly as low as the scale tang. We are prepared to furnish this line of goods, together with the scale tang and iron handle, very promptly and very respectfully invite the attention of the trade.

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We allow a trade discount of 25 per cent. No discount on any order less than one dozen. The material used in the manufacture of these goods is the very best. All are nickel plated and furnished with a neat morocco case. For etching name on blade or gilding handles, we charge 50 cents each. These prices being as low as those for plain scissors of the same quality, will place them within the reach of all. Respectfully

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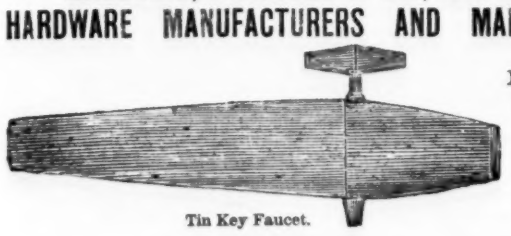

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To the Editor of The Iron Age: Referring to the concluding passage in an editorial article entitled as above, and contained in your most valuable paper of Oct. 3, 1878, I presume those of your readers interested in this matter will find it of value to know in what manner protection is afforded to them under the provisions of the German trade-mark law of Nov. 30, 1874.

Paragraph 14 of the German trade-mark law reads thus: "Whosoever knowingly and illegally applies to merchandise or to the packing thereof a trade-mark protected under the provisions of this law, or whosoever applies the name or the firm of a domestic manufacturer or tradesman, or whosoever puts into market or keeps for sale merchandise thus illegally marked, will be fined from 150 to 3000 marks, or imprisoned for not more than 6 months, and will be held for damages in favor of the party damaged." As to the "name or firm of a domestic manufacturer or tradesman," I beg to remark that Americans enjoy the rights of such domestic manufacturers, &c., in accordance with the stipulations agreed upon in the commercial treaty between the United States and Germany of Dec. 11, 1871, article 17, and according to section 20 of the trade-mark law. The conclusion of your editorial article of Oct. 3, 1878, reading, "the responsible manufacturers do not do it, and those who do are hard to catch," is liable to lead to the impression that the manufacturers are the only responsible parties. Now, everybody keeping for sale goods provided with an imitated trade-mark is responsible. It may sometimes be a matter of some difficulty to prove that such party has knowingly made use of the imitation; but as he is held by the court to answer from whom he has purchased the goods thus illegally marked, it will be an easy task to find out the responsible imitator. As the guilty defendant is bound to pay damages to his prosecutor, I cannot see how prosecuting a trade-mark in Germany could ever become a costly affair, especially as in accordance with the spirit of paragraph 17 of the trade-mark law it is understood that the condemned imitator be held for all the cost arising out of the respective law suit. All imitated labels found in possession of the defrauder, or the goods or the packing containing the trade-mark illegally applied, are destroyed, and the plaintiff may publicly advertise the sentence of the court at the defrauder's expense. I really cannot see what fairer inducements any legislation could have offered for the protection of trade-marks. I do not deny that the German manufacturer and tradesman, particularly in some of the so-called petty States, incline very much to make use of a cheap imitation of saleable foreign goods. But this may be attributed mainly to the former lawless state of things in the thirty and odd different German States. Now that there is a uniform patent and trade-mark law for the entire German empire, matters will soon show themselves in a different light; they even now look by far better than they did a year or two ago, for both the patent and the trade-mark law are enforced most vigorously. If your manufacturers would but make use of the laws they would find no reason for further complaints, but they really do not avail themselves of the protection offered to them.

For having a trade-mark protected in the German Empire it is necessary for an American to prove that this very same trade-mark is duly protected in the United States in favor of the petitioner. Such proof—a copy from the records signed by the respective clerk or commissioner—must be legalized by a German consul. The protection covers 10 years, and can then be extended, but it expires with the protection in the United States. It must be stated what class of goods the trade-mark shall be used with, but it need not be said "cutlery, hinges, tools, &c.," it will suffice to say, "hardware, dry goods, &c." A power of attorney, verified by a German consul, will be required. The petitioner must also furnish a wood block for the publication of his trade-mark, and half-a-dozen labels showing the trade-mark. The said wood block (best size about 1½ inch square) will be returned to the patentee. The trade-marks are registered at the Handels-gericht at Leipsic. The official cost (government fee) is 50 marks; six marks must be paid for official publication provided the wood block does not exced the above size. If made in Germany it would cost about five to six marks. The official interpreter and counsellor at the court at Leipsic charges 30 marks, and if 30 more marks are added for the attorney's full charges, the entire cost of registration for 10 years would not exceed $30. I know that several American manufacturers could not produce the proof of their trade-mark being protected in the United States. Such a case of emergency they could possibly have met by asking their agents at Hamburgh or Bremen to have those trade-marks registered in their, the agents', names. My candid opinion is that if your exporting manufacturers will place themselves under the German trade-mark law, their just complaints about imitation of their labels will soon cease, at least so far as Germany is concerned. Very respectfully, ROBT. R. SCHMIDT.

BERLIN, Oct. 30, 1878.

Another Liverpool Steam Line for Philadelphia.

The Philadelphia *North American* says: A bold and most decided enlargement of the Liverpool service having been decided upon three months ago, Mr. Clement A. Griscom, of the great shipping house of Peter Wright & Sons, embarked for Europe with the authority in his pocket to make all the necessary arrangements for the establishment of a distinct line. Mr. Griscom's mission was entirely satisfactory, and he has just returned home. The *North American* has obtained the following particulars of the "new departure," as far as the details have been arranged. There are many things yet to complete, but these are being rapidly settled by cable. The enterprise takes the form of a freight service between Philadelphia and Liverpool, which is to be called the Blue Star Line, after the flag of the London house which is the heaviest owner of the steamers that are to be employed. The first steamer will be dispatched from this port the first week in December, and the line will start with seven vessels. In March the service will be increased by six more steamers, making a fleet of 13 in all. From December until March two steamers will depart from each end of the line weekly, and after March 1 there will be tri-weekly sailings. It must be borne in mind that this is entirely independent of the regular passenger service of the American Line and of the Red Star to Antwerp, which latter, by the way, will also be augmented by three steamers, one, the Zeeland, having already taken her place, and two more which are building at Barrow, England, one to be ready in March and the other in May. It will thus be seen that during the coming year there will be a transatlantic steamer departing and arriving at Philadelphia at least on five days per week.

The Blue Line steamers are all stanch iron vessels and comparatively new. They are British built and owned by British capitalists. They have been engaged in the East Indian, Australian and North American trades. The names of the seven which are to begin running in December are the Naples, Timoor, Suez, Antonio, Athens, Devonshire and Costello. The names of the six which are to be added in March are the Lord Clive, Lord Gough, Tuscany, Sicily, Thessaly and City of Bristol.

The terminus of the line at this port will be Girard Point, which is destined to become a scene of busy activity. The terminal facilities already existing are being materially enlarged by the addition of store houses, sheds, hoisting apparatus and railroad sidings. Several piers for the accommodation of the steamers are now in progress of construction. The Blue Star Line will engage in a general freight business, carrying no passengers. The steamers are to be especially fitted up for the transportation of cattle on the hoof, and in all of them important changes as regards ventilating, feeding and storage facilities, must be made. It is quite possible that these alterations will be made at the Delaware River ship yards. It is certain some of the work will be done here. The steamers will also largely engage in the grain, provision, petroleum, cotton and tobacco trades, and the whole system of the Pennsylvania Railroad will be brought into requisition to load these ships. The enterprise is expected to give a great impetus to the export trade, not only of Philadelphia, but the West and South.

The Contemplated Hudson River Tunnel.

This project lags, but interest in it has not died out, judging from the inquiries of our correspondents. The scheme is fathered by Col. D. C. Haskin, of California, who seeks to associate with him actively Tronor W. Park, Senator Jones and others. As we learn from those best informed, he is again busy with the finances and speaks hopefully with reference to resuming work. As a matter of fact the whole enterprise appears to stand exactly where it did about a year ago, when it was announced that litigation with the Delaware, Lackawanna and Western Railroad Company had ended and that no further legal impediments remained. Col. W. H. Payne, the engineer, who has been seen by a representative of *The Iron Age*, says that nothing has been done in the work of construction, the deep pit in Jersey City remaining undisturbed. When the finances are arranged it will not take long to begin. The attorneys of the company, whose office is in Montgomery street, Jersey City, were also called upon. Mr. White said it was correct that the company had been incorporated with an adequate capital, articles to this effect having been taken out both in the State of New York and in New Jersey, but he could give little further information. Mr. W. W. Evans, consulting engineer, now absent in Holland, was recently asked for his views on the subject, and remarked that while the scheme was feasible it was environed by much difficulty, on account of the treacherous nature of silt, in which two-thirds of the work must be done. The Hudson River tunnel will be a much more serious undertaking than the Thames tunnel. Mr. Evans was not sure of the ability of compressed air to sustain the bed of the river as the tunnel advances. He thought, however, that the finding of space within New York city sufficient for depot accommodations, turn tables, &c., might be the most serious difficulty. Property owners would object to the use of Washington Square for such purposes. In regard to some other plan than compressed air, Mr. Evans remarked that there were few competent authorities who could be consulted in matters relating to tunnel construction. Probably none were better qualified to speak than the builder of the tunnel under the lake at Chicago for the water works. He thought it probable that Col. Haskin would first try compressed air, and, this failing, would resort to some other expedient. He did not fear indurated silt, but they were liable to encounter "pockets" of confined gas, which might prove mischievous, not only by letting in water, but by injuring the workmen. He would much prefer to run the tunnel deeper and cut through the rock. According to the survey already made, about two-thirds of the cutting would be through silt. In penetrating the latter there would be timber uprights on either side, with a cap on top to support sheeting, driven in advance. This was the common method in California, where Col. Haskin is everywhere known as a successful contractor and practical man, and where his own acquaintance with him as an engineer was first made.

It is said there is a certain point on a ridge high up on Kearsarge Mountain where can be heard the rumble of trains on the Southern Pacific Railroad as they cross the range to the west of Mohave, 140 miles distant. There is a regular daily train passing at 10.30 o'clock, and upon reaching the place at this hour the noise of the train is heard as stated.

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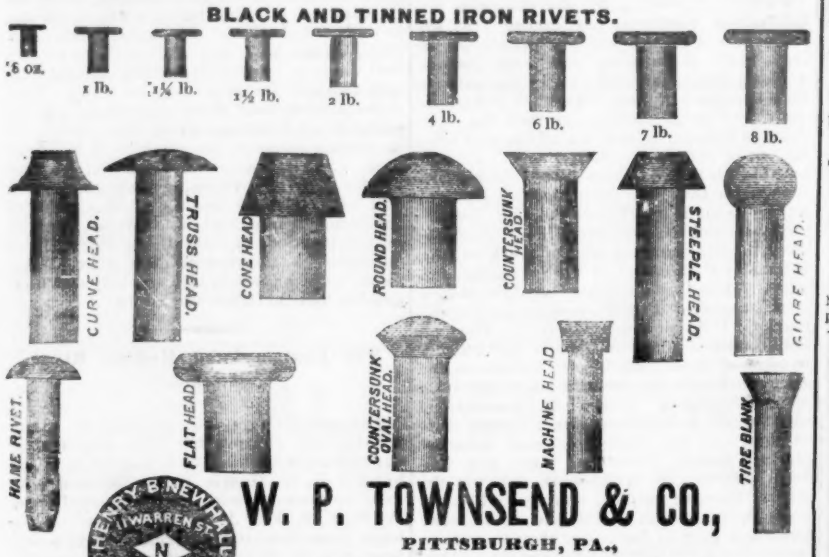

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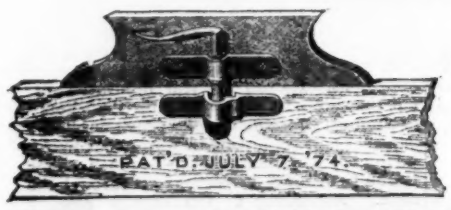

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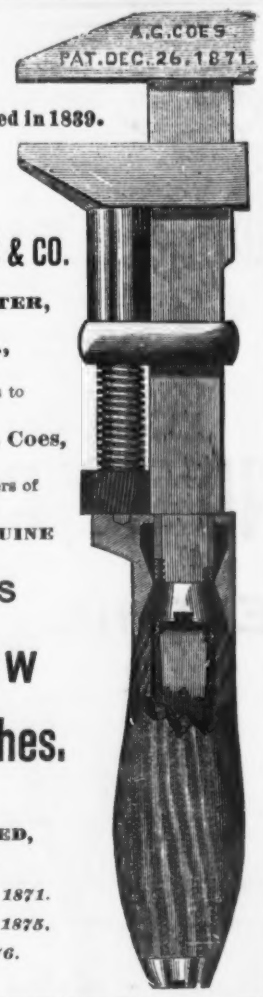

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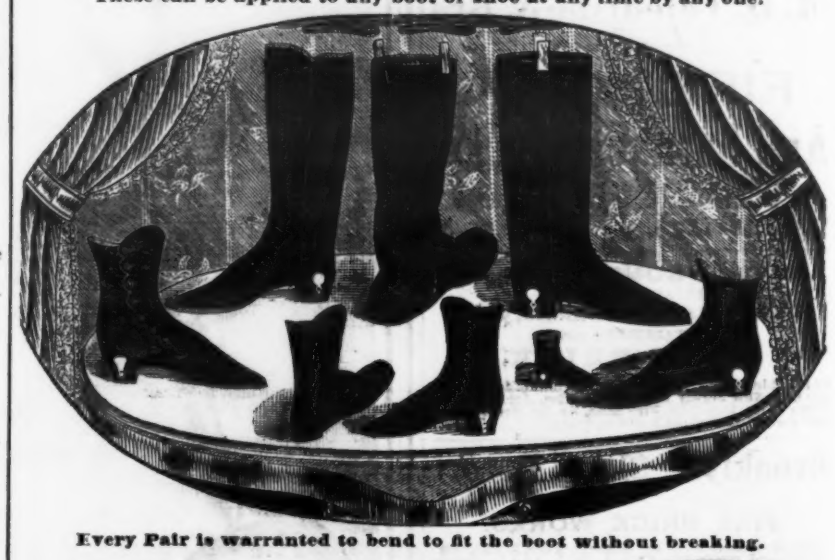

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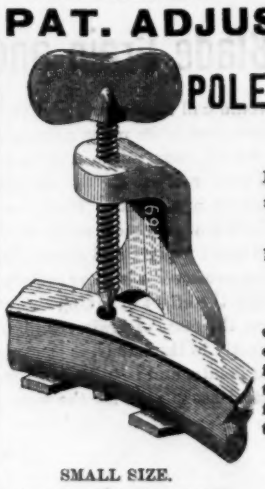

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The Iron Age.

AND

Metallurgical Review.

New York, Thursday, November 28, 1878.

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CONTENTS.

Reciprocity with the Sandwich Islands turns out to be a very one-sided affair. Dr. Scott, United States Consul at Honolulu, has submitted to the Secretary of State an official communication in which he argues that the existing treaty of reciprocity between the United States and the Hawaiian kingdom should be amended. He says the value of the articles imported into this country from the Sandwich Islands is six times that of our exports to them, and that we receive no adequate return for our relinquishment of customs duties on the Hawaiian sugar and rice products. This is only another illustration of the fact that one nation does not buy of another any more than she wants (and would want in any event) simply because reciprocity has been established. The talk of foreign newspapers about the advantages we should derive from free trade as regards our exports, is mostly "gammon." For example, it is not likely that the reciprocity which the French people desire would make them any better customers than they now are for our manufactures, while it would give them enormous advantages in our markets. The course of foreign trade is never influenced by sentimental considerations.

The Business Situation in England.

The recent failure of the Glasgow Bank and of the banks and firms that went down with it, calls attention to one fact which merits careful consideration. We refer to the unfavorable course of the foreign trade of Great Britain during the past few years. The record of the Bank of Glasgow illustrates the recklessness of the efforts to obtain relief. Upward of 5,000,000 pounds sterling were lost in the struggle by this one bank. A short time after the closing of the Glasgow institution and the houses in the India trade that followed, a large Liverpool house in the South American trade suspended, and wailings over the "rottenness" of both East India and South American trade followed. There is no doubt some truth in the statement that the depreciation in silver, which these houses were compelled to receive in payment for goods, contributed largely to their disasters, and also that competition was so great that they were not able to make up their losses by advancing prices to compensate for the depreciation. The fact that the East Indian government has decided to make gold the standard, is proof that these statements are not mere excuses to account for the results of a mistaken business policy. But this is not all. The trouble is deeper than that. England is a vast workshop, and from the same causes that bring distress and ruin to a corporation or an individual workshop, this national one must suffer also. When a firm or corporation or an individual pays out more than he receives, if he has a large bank balance or good credit he can continue for some time—in fact, until his balance and his credit are both exhausted; but there comes a day of reckoning at last. This is the condition of England. She is beginning to feel the stress of the constant drain of capital consequent on the adverse balance of trade. "Discounts are higher now," says the London *Economist*, "than they were "last year, for the simple reason that the "market is poorer in loanable funds." The Bank of England's reserves are at a low point, and it has been paying for American and French gold coin at the rate of one farthing per dollar, or one-half of one per cent. more than usual. The reason for this is simply that England has come to rely upon other nations for a market for her goods and they have failed her, while she has been forced to take from those nations as much as she ever did of certain classes of products. In a recently published interview the president of the Bank of Leeds is reported as saying: "What are you Amori-"cans going to do with us? It is you that "are giving us so much stagnation and "distress. We have come to rely upon you "for our breadstuffs and meat. You used "to deal it out on this side and take our "goods in return. You take nothing now, "and are drawing the money from our "bank vaults."

Were it not for the condition of our industries we would be "dealing out" and "taking in return" still. It has been toward such a policy that English economists have been urging us for years. We have been implored again and again to produce what we could produce the cheapest, and buy from England what she could produce cheaper than we. We have been asked to send our breadstuffs, meat and other provisionsa and take English cottons and iron in payment, and stop manufacturing them because we could not do it as cheaply as England. We have refused, and the wisdom of our choice is apparent. To-day we are virtually the only country that has a balance of trade in its favor; $257,814,234 excess of exports of domestic merchandise over net imports for the fiscal year ending June 30, 1878, is not a bad showing. England has been neglecting her agricultural development and has fostered manufacturing. To be sure the amount of available land for tillage is small, and the laws of that country tend to make the amount still less; but conceding this, all has not been done to raise her own supplies in Great Britain and Ireland that might have been. It is stated that during the past year the British importation of cereals has reached the enormous figure of £65,000,000 or $325,000,000. Other nations can stop buying her manufactures, but her people must have food.

One effect of the present financial situation in England will undoubtedly be such a shrinkage in capital and wages as will greatly reduce the cost of all British manufactures. Heretofore when one market has been lost to England, or competition was so great in a certain market that there was no longer any profit to be made, she turned to others; but now all are equally unprofitable, and the only relief is to be found in cheapening production. Iron, as is well known, has declined heavily in England since the Glasgow failure. Wages in the South Staffordshire district have followed—Mr. Chamberlain, as the result of an arbitration, decreeing a 5 per cent. reduction. Wages in other iron districts must also be reduced, and in some they have already fallen. In other trades connected with the iron industry reductions must take place. The result of all this will be a reduction in the ability of England to consume American provisions, while we shall experience more difficulty in meeting her competition in the markets of the world. What will be the effect of the foreign complications which menace Great Britain cannot now be predicted.

The Rise in Tin.

Since we wrote editorially concerning tin early in August last, the metal has been subject to extreme fluctuations. Straits tin began the year at £66 per ton in London and at 15¼ cents per pound at New York, and thenceforward slowly declined until it reached 13⅛ cents in September in this city, and about the middle of October £52. 15/ in London. This market was the first to give signs of improvement, owing in part to a remarkable steadiness in the demand for actual consumption throughout the summer months, and in part to a casual falling off in the visible supply early in the fall. The quantity known to be on the way from the Straits to arrive up to January 1st, proved to be but 4000 slabs on the 1st of October. These circumstances caused some larger operators and dealers in this city and vicinity to secure whatever they could buy during the latter part of September, and it was soon discovered that the control of the market had passed into strong hands. When these facts became known in England and Holland, confidence in the immediate future of tin was somewhat strengthened, but the still unfavorable statistical situation held in check an immediate rebound during the first week in October, the statistics at the time being as follows:

STOCK OF TIN IN ENGLAND AND HOLLAND.

	Oct. 1. 1878. Tons.	Oct. 1. 1877. Tons.	Oct. 1. 1876. Tons.
London	10,029	9,269	7,912
Banca in Holland	2,587	2,276	2,469
Billiton "	1,678	1,448	951
Australian "	426	577	795
Total	14,720	13,570	12,127
QUANTITY AFLOAT.			
Straits	150	55	660
Australian	2,170	2,250	1,700
Banca	262	19	218
Billiton	975	800	1,000
Total	3,557	3,124	3,578

The visible supply, therefore, proved to be 18,277, against 16,694 on Oct. 1, 1877, and 15,705 on Oct. 1, 1876. Compared with previous years it showed a notable excess, but compared with the visible supply Sept. 1, which had been 18,672 tons, it showed a slight improvement, the decrease being 395 tons. At this juncture the various great failures in England occurred, and had the effect of causing a semi-panic in many speculative articles of merchandise there, including tin, which dropped at once to the unprecedentedly low figure of £52. 15/ per ton for Straits. This had no effect here, however, the position of the metal being intrinsically too strong on this side. After a few days the failures in England began to be viewed with less alarm, notwithstanding their continuance, and the decline in tin was not only promptly recovered, but this tendency was even improved upon in a striking manner, the market advancing altogether about 23 per cent., or £12, the most rapid rebound witnessed in London for many years. At first this improvement was looked upon as altogether too great and too rapid to last, in the face of the still large visible supply and the demoralization in general trade inseparable from continued heavy failures in many branches. But in spite of all these circumstances the metal steadied at the advance. It will consequently be of interest to discover the reasons for its strength. Prominent among these has been a sudden abatement in Australian shipments to London, announced in October, and the simultaneous receipt of letters fully explaining that prospective production at the antipodes had been greatly exaggerated, and that low prices had begun to tell; that besides, with the dry summer season drawing near, there is every likelihood of light shipments thence all the way into our spring months. Distribution to consumption was at the same time on a larger scale than usual in England and Holland; and coinciding as all these facts did with the favorable aspect on this side, the movement seemed legitimate enough. An advance to 17 cents was the response from this side, and the late speculators for a fall in Europe and America were reluctantly compelled to cover their outstanding contracts at these prices. There are, nevertheless, many in the metal trade who still view this unexpected recovery with suspicion, in remembrance of the sore disappointments to which this metal and its occasional rebounds have led of late years. Much will depend on further developments in Europe. The fact that hardly a day has passed since Oct. 4 on which some new failure has not been announced in Great Britain, leads to the supposition that there are a great many more bankrupt concerns over there than is as yet generally admitted, and if this should prove true and disasters continue for a month longer, no speculative article can be sustained unless it be statistically stronger than tin in reality is.

The Electric Light.

Notwithstanding the recent discussion before the American Gas Light Association, the indications are that the electric light is making headway. There is probably more inventive genius engaged at the present time in working out the possibilities of electricity than in any other direction, and with the known fact that a light can be obtained by the use of the electric current, it will be very surprising if some cheap method of using it is not found. At present the practical application of the light to every-day purposes is mostly confined to England and France. The London *Times* has introduced it into its establishment, and the London Board of Public Works are experimenting with it along the Thames Embankment. Some large manufacturing establishments in the interior of England are also experimenting with it. Its use in France has become so well known through the letters from the Paris Exposition, that we need only refer to it. In this country, while but little has been done in its practical application, more attention has been paid to perfecting and cheapening it than in either England or France. The most interesting display of the light has been at the Mechanics' Fair in Boston, where two rival American machines—the Wallace-Farmer and the Brush—are in operation side by side. One of these has a capacity of four lights and the other of five. One uses carbon points or pencils and the other oblong carbon plates. The great defect of these lights, as well as of the Jablochkoff candle and all other European devices, is the rapid consumption of the carbons, as well as the cost of power to drive the machines. Another defect is the intensity of the light and its peculiar color. Still another difficulty is that as the lights are multiplied on a given circuit the illuminating power is reduced out of all proportion to the electricity expended. As is well known, it is claimed that Mr. Edison has remedied these defects. His plan, so far as we can learn, consists in the use of platinum coil, which is illuminated by the resistance it offers to the passage of the electric current. Platinum has been used for this purpose before, in strips at least, but the difficulty has been that the intense heat developed has fused the platinum. This Edison has overcome by the adoption of some device that enables him to reduce the intensity of the current below the point of fusion. Other inventors are busy with the subject, and it does not seem possible that the problem of producing the electric light conveniently and economically will long remain unsolved.

Where Is It?

In the *Bulletin of the American Iron and Steel Association* for Nov. 20th, we find the following:

To the Secretary of The American Iron and Steel Association.—Sir: In Western Pennsylvania there is a 16-foot coke furnace, making 700 gross tons of pig iron per week from an ore mixture yielding 42½ per cent. of iron. Anthracite men can no longer point to the Lucy Furnaces and say rich ore is the sole cause of a large yield. E.

PHILADELPHIA, November 18, 1878.

We confess that this is news to us, and in all sincerity we ask, Where is it? We have kept pretty close watch of the work of coke furnaces, and have never heard of this before. To the best of our knowledge and belief there is but one 16-foot furnace in blast in Western Pennsylvania, and that is the Charlotte Furnace at Scottdale, which is not making anything like 700 tons per week. We fear that the news communicated in the above letter belongs to the class of "important—if true" items.

With regard to the Lucy Furnace, we can only say that no one who is in the least acquainted with this furnace is likely to claim that its large yield is attributable to the richness of the ores used in it. Anthracite furnace men are already learning, from the results of their experiments with a mixture of coke, that something may be due to fuel, and those who know the facts know that it is largely due to the changes that have been made in the lines of the furnaces and in the conditions of blowing.

The present strike at the flint glass works at Pittsburgh is peculiar in the fact that the question of wages does not enter into the struggle. It is one of those labor troubles which Mr. Rupert Kettle, the well-known advocate of arbitration in England, would classify under the head, "Strikes from matters of sentiment." The question in the main is, Shall the manufacturers be allowed to run their works to suit themselves, employing or discharging such men as they please? Also, Shall they be allowed to make such articles as they desire and can find a market for? The men represent that the manufacturers are taking the course they have adopted for the purpose of destroying the union. We do not understand this to be the case, but they do propose to put a stop to unwarranted and impertinent interference with their business. In other words, they demand a promise or guarantee that the constant and vexatious interference of the past shall cease, and this the workmen refuse to give. For 15 years there has been no strike in the flint glass trade. Prices have not been reduced since the war. There was steady employment, good wages and a most friendly feeling. Most of the manufacturers were at one time workmen. About 12 months ago a union was formed, and there has been constant trouble ever since. The true and defensible object of union has not been known or has been lost sight of, and the members seem to have thought that a union did not fulfill the end of its existence unless it made trouble. If a winter of idleness follows they may learn the folly of unwarranted interference.

Now that the Fisheries Award has been paid, those who were troubled about the possibilities of a breach of the peace between this country and Great Britain will breathe more freely. It is just as well to remember, however, that the danger of unpleasant international complications is greater now than it was before. While the question of payment was under consideration there was less disposition on the part of the government to demand a recognition of our rights than there will be now. Having paid an absurd amount rather than repudiate the action of a commission of arbitration, our government will naturally incline to see that our fishermen get what has been bought and paid for. There will be little disposition to submit patiently to such absurd conditions and regulations as the local authorities along the Provincial coast may see fit to enforce from time to time; and every consideration of good neighborhood makes it expedient that such regulations as are necessary to define the time and manner in which our fishermen shall ply their vocation in British waters, shall be agreed upon between the governments which subscribed to the treaty of Washington. Such regulations would, of course, supersede and render void all local statutes, and our fishermen, knowing the rules, would not be likely to be caught in traps set for them by local courts and constables. If this precaution is neglected, there is every probability that the gad-fly policy of the provincial authorities will lead them into trouble. When our people have bought and paid for certain privileges, they are likely to insist upon having them.

Our Philadelphia friends are much elated at the prospect of a new steam line between that city and Liverpool. It will not be an American line, as the steamers are all owned abroad, but it will help to further increase the growing importance of Philadelphia as a port of export. The new line will begin operations early in December. Elsewhere we give fuller information from Philadelphia sources.

NEW PUBLICATIONS.

A PRACTICAL TREATISE ON CHINA PAINTING IN AMERICA; WITH SOME SUGGESTIONS AS TO DECORATIVE ART. By Camille Piton, Principal of the National Art Training School, Philadelphia. With folio album of plates. New York: John Wiley & Son, 1878.

The author's object has been to prepare a convenient handbook for the use of American students of decorative art and make it as practical as possible. Unlike most works of this kind, it wastes no space in discussing the principles of design or in arguing moot questions of taste. It is presumed that the student can educate himself in such matters in other ways. Prof. Piton's object is to aid him in his practical work by teaching him what he must know in order to express such ideas as he may have. In this he is very successful. Beginning with a clear exposition of the theory of color, he leads the student step by step through an exposition of the law of complementary colors to the practical use of this elementary information in painting on porcelain. The facts here given are just those which the art student needs to know, and which will save him many vexatious mistakes and costly experiments. Having given more or less time to amateur work in painting on porcelain, we are the better able to appreciate the practical value of these suggestions. The accompanying album of plates adds much to the value of the work. It is a progressive series of lessons to be worked out on porcelain by the aid of the information given in the text. The student is supposed to have studied drawing before he begins, as all persons should who essay work on china or porcelain; and Prof. Piton undertakes only to direct his efforts with mineral colors, so that he shall reach success by the easiest and most direct methods. We take pleasure in saying that we consider the work invaluable to the student of decorative art, especially when he is working without the assistance of a competent master.

THE AMATEUR'S HANDBOOK. Published by the Industrial Publication Company. Price, 10 cents.

The editor of the *Young Scientist* has compiled a number of practical recipes on alloys, glass working, varnishes, lacquers, inks, cements, &c., which his experience has taught him are most frequently the subjects of inquiry. His little work of 40 pages naturally does not meet the numerous and more specific needs of practical mechanics, but will prove highly valuable to beginners, within whose reach its low price easily places it.

WRINKLES AND RECIPES. Compiled from the *Scientific American*. Edited by Park Benjamin, Ph. D. Published by Messrs. Wiley & Sons, New York. Price, $1.50.

In the present edition of this work, the thirteenth, much has been added that is new and carries it to date. Its editor, Mr. Benjamin, and its contributors, Prof. Thurston, Prof. Van der Weyde, Mr. R. H. Buel and Mr. Joshua Rose, are all well known and acknowledged authorities in their several branches. The topics considered are classed under the headings of mechanics, engineering, practical technology, the farm, and household hints. Mechanics includes a complete description and illustration of the tools necessary for plain machine work in the various metals, with a number of practical directions and valuable figures which are constantly needed in the shop. We notice that a description of Julius Hall's recent invention of drilling square holes has also

found a place in the pages of this department. The chapter on hardening and tempering steel is supplemented by a color tempering scale as a frontispiece, a feature which is novel and will not fail to meet the approval of mechanics and engineers. It shows the series of colors through which heated steel passes, and gives the points at which it is best to temper tools for each special purpose. The chapter on engineering is full and exhaustive; there are good articles on the indicator and the indicator diagram, and a short essay on the boiler. Shafting, belting and pulleys are well treated, numerous tables for finding arc of contact and horsepower transmitted being given. The main body of the recipes on cements, alloys, solders, inks, electroplating, &c., are gathered in the department of practical technology in which there are also illustrated descriptions of the telephone, microphone, phonograph, &c. Subjects to which attention is rarely directed in similar works are the preparation of natural history specimens, which, like hints about drawing and sketching, have found ample space in "Wrinkles and Recipes." The farm and the dairy recipes will render the work popular with rural readers, and in household hints an attempt is made to meet the wants of a large class who have hitherto been forced to glean scraps of doubtful information from almanacs. We feel confident that many will find the book a convenient adviser in case of need.

other on that of wrought iron and steel, in which we find data of interest. A beautiful colored map is added, which, if we remember correctly, has served on a previous occasion.

THE PRESENT STATE OF THE IRON INDUSTRY IN SWEDEN (Sur l'Etat Actuel de l'Industrie du Fer en Suède). By Prof. Richard Akerman. Stockholm, Sweden.

The Paris Exhibition, we suppose, accounts for the publication by the Swedish Jernkontoret of this admirable summary of the present state of the iron industry in Sweden. The work, written by Prof. Akerman, who has earned an international reputation, points out briefly, in a few pages of general remarks, the leading features which distinguish the position of Swedish ironmasters from those of any other iron-producing country, and gives an account of the geological relations and chemical characteristics of Sweden's chief ore—the magnetite—of which over 400 complete analyses are given in a series of tables serving as an appendix. There is a chapter on the manufacture of pig and an-

BOILERS AND BOILER EXPLOSIONS.

J. M. Allen's Observations During 1877.

We have before us the annual report of the Hartford Steam Boiler Inspection Company. It brings us an account of the company's work for the year ended Dec. 31, 1877. During that year the company made 11,629 internal inspections of steam boilers, and almost three times as many external inspections. Some 3690 defects were discovered which required immediate attention. There were 85 furnaces in dangerous condition, 517 plates were found fractured, 337 plates dangerously burned and 357 blistered plates. The total number of defects discovered amounted to no less than 15,964. In regard to the cases of sediment and deposit, of which 2005 were found, and of which 440 were considered dangerous, and incrustation and scale, of which 341 were dangerous, the report says:

"These are difficulties which are common to boilers all over the country. Water contains more or less impurity in solution which becomes precipitated by an elevation of temperature, and if great care is not exercised a hard indurate scale is formed, which is always a bad conductor of heat. The plates become over-heated, often to such an extent as to destroy their 'life' and strength, and render them positively dangerous. Various 'compounds' and 'boiler purgers' have been prepared to overcome these evils, and many of them work well in some localities. These difficulties arise mainly from the geological formation through which the water percolates, and as the formation is not uniform all over the country, the water will of course carry different impurities in different localities. Hence a preparation that would remove or prevent a lime scale, would have very little effect upon a scale formed from chalybeate waters. Above all things, a preparation in which acid predominates should be avoided.

"Three hundred and eighty-three safety valves were found overloaded, of which 158 were dangerous. There is probably no boiler attachment more tampered with than the safety valve. It is overloaded, tied down, or, from want of attention, allowed to corrode in its seat, and yet it is called a 'safety valve.' It is an attachment that should have the most careful attention at all times. Four hundred and three dangerous pressure gauges were found.

"Most engineers place great reliance on the steam gauge, and so long as the pressure does not exceed the required limit they think all is safe. But when an examination of the gauge is made and it is found not to show the actual pressure of steam, but instead some 30 or 40 pounds less, and that the boilers are under 110 or 120 pounds pressure instead of 80 pounds, it becomes a serious matter. This is no imaginary condition of things, but one which frequently comes up in our experience. Hence the importance of examining steam gauges and comparing them with one known to be correct. We have found 615 boilers without gauges during the year, but as most of them were running at pressures very little above the atmosphere, we account only six as immediately dangerous. Cases of deficiency of water, 101—43 dangerous; broken braces and stays, 378—216 dangerous. These defects were found by internal examinations. No superficial inspection or hydrostatic test simply will discover such defects. And from want of a careful internal inspection, boilers greatly weakened by internal corrosion or broken braces and stays are pronounced sound and in good and safe condition. When an explosion occurs, scattering death and destruction in its vicinity, the discovery of such defects is not calculated to appease the public indignation. During the year 133 boilers were condemned as unsafe to use and beyond repair.

"The defects enumerated above can only be discovered by the most careful examination. It should be done by men of experience and good judgment. The cursory examination of boilers which is often made lulls the proprietor into a feeling of security which may be fatal. The examination may have cost him less money, but he knows very little about the actual condition of the boiler."

During the year President Allen reports 109 boiler explosions with 149 persons killed and 205 wounded. Below we give extracts from that portion of the report devoted to this subject, with cuts illustrating the manner of the explosions, weakness, &c., of the boilers.

The following is an account of the explosion of the boiler of a tug boat, by which two persons were killed. Portions of the boiler were thrown 250 feet; timbers 8 inches square were wrenched into shreds. It was stated at the inquest that only 75 pounds of steam was on the boiler at the time of the explosion. Of this, however, there is no certainty. The following is the report of the special agent who visited the scene on the day of the explosion:

"This tug, which exploded in June, had to all appearances a very strong boiler—so much so that the government inspector said if he had been called on to name the best boiler in his district he would have selected this one. At the inquest the engineer was very sharply questioned as to his tampering with the locked safety valve, and about a lead weight that was found on the lever. It came out that the boat was much used in winter for breaking ice in the river, and the shock of butting against it would shift the weight toward the fulcrum in spite of such fastenings as had been used, so to keep up the load on the valve he had added another weight, claiming that it would 'blow' at the prescribed pressure. A short time before the accident the boiler had admirably sustained the usual hydrostatic test as the law directs.

"Fig. 1 is a view of the top of the boiler, showing the man-hole, steam dome and smoke opening. From a careful examination the conclusion arrived at was that the boiler, notwithstanding its assumed strength, was very weak from faulty construction. It contained within itself in the form of braces and stays the elements that caused its own destruction. The shell was cut away for the man-hole and dome 40 inches in 78, and reinforced by a light cast iron frame and by eight stays or braces from the dome cover to a yielding portion of the shell, that portion within the dome being in equilibrium of pressure. In addition to these supports six braces were connected to the shell and the back smoke-box.

"Fig. 2 is a longitudinal section of the boiler, showing the bracing of the dome to the unsupported portions of the shell. Other bracing is also shown, and the line of fracture on the left side. These braces, which are ½x4¼ inches in section, are nicely fitted, having round bolts fitting snugly into round holes in the arched double stirrups which stand upon an unyielding part of the crown of the smoke-box, the other ends of the braces being similarly fitted to double-angle plates on the shell. Now, glancing at Fig. 3, imagine this smoke-box to be an expanding body relatively to the shell; that is, imagine it to be a little hotter than the shell (and why may it not be considerably so, filled at times with intensely heated gases and surrounded by water at 331 degrees, which is the temperature at which it boils under 90 pounds pressure above the atmosphere, while the shell, unprotected as it was from the cold atmosphere, say at times as low as 60 degrees outside and 331 degrees inside?) and who can estimate the force that is added to the 90 pounds internal pressure? But the shell was not entirely rigid and unyielding, the space above the back smoke-box must be flattened by the radial thrust of all the stays and braces around the smoke-box, which would bend the flange of the

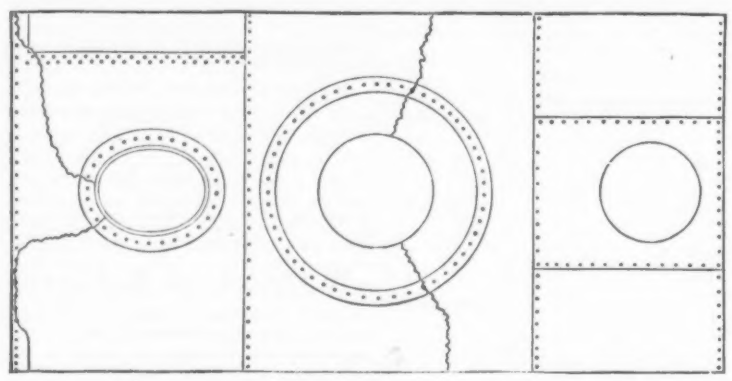


Fig. 1.—Exploded Tug Boat Boiler.—Plan Showing Steam Dome, Manhole and the Location of the Cracks.

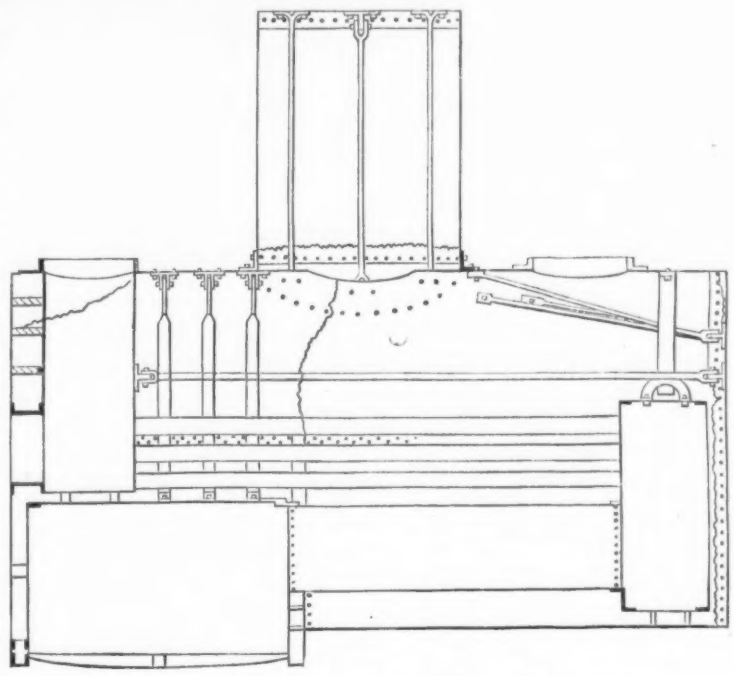


Fig. 2.—Vertical Section of Tug-Boat Boiler, Showing Bracing.

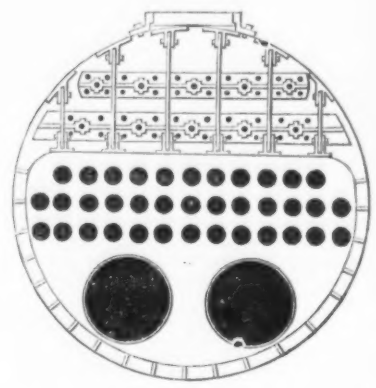


Fig. 3—Cross Section Through the Smoke-Box.

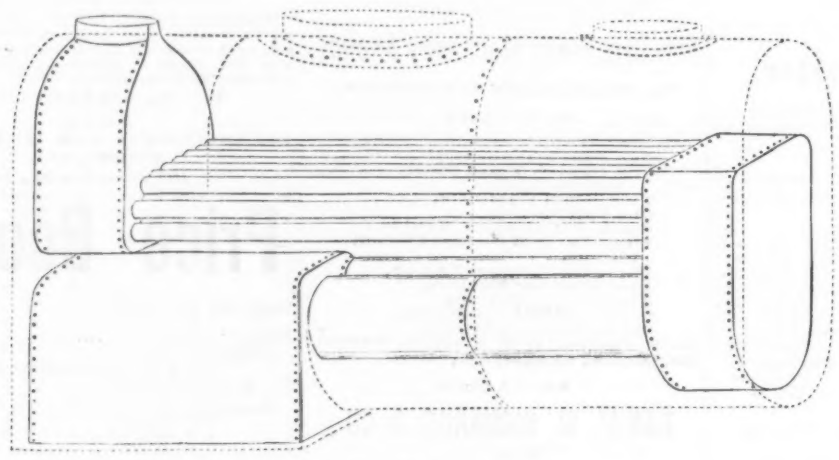


Fig. 4.—Perspective View of the Interior of the Tug-Boat Boiler.

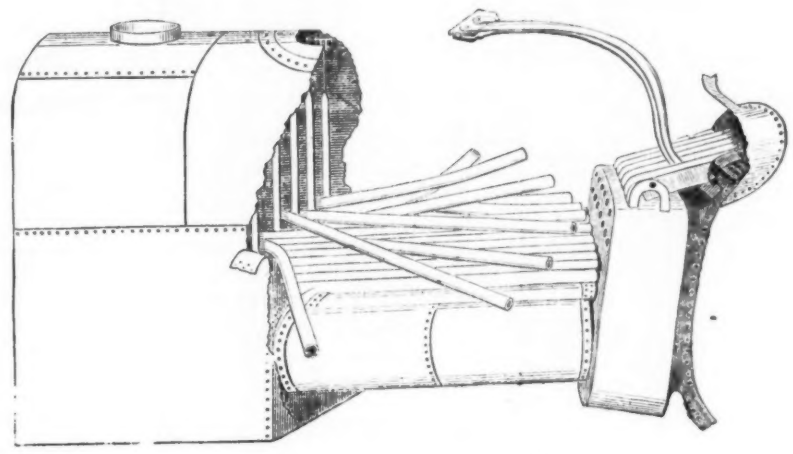


Fig. 5.—The Boiler After the Explosion.

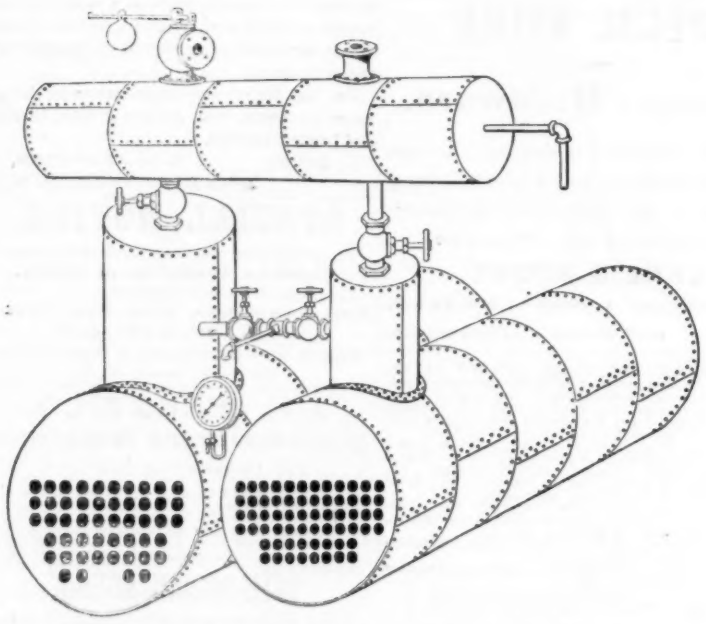


Fig. 6.—Defective Setting—no Gauge on the Exploded Boiler.

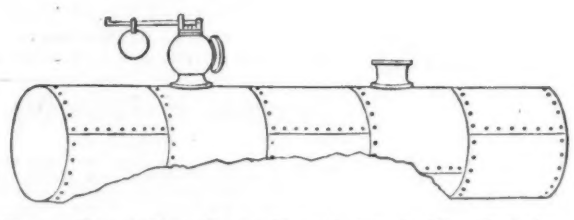


Fig. 7.—Top of Steam Drum, Shown in Fig. 6, After Explosion.

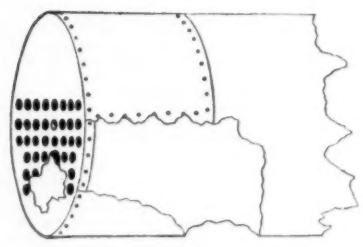


Fig. 8.—Rear End of Left-hand Boiler, thrown 225 feet.

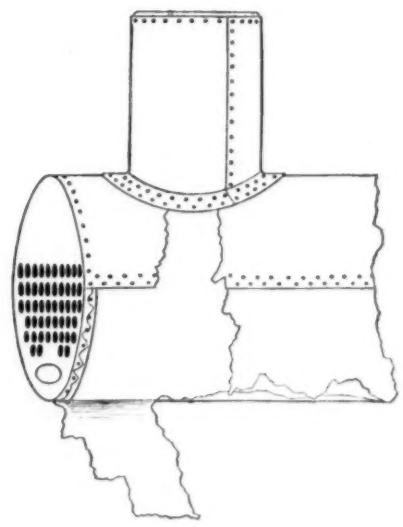


Fig. 9.—Front End of Left-hand Boiler, Showing Torn Plates.

EXAMPLES OF EXPLODED BOILERS EXAMINED BY THE HARTFORD STEAM BOILER INSPECTION COMPANY.

back head inward. The cracks that were caused by this action were plainly distinguishable from the fresh rupture, as was a crack or old fracture in the man-hole frame. Two years' action proved quite sufficient to bring it to destruction; a considerable length of weakened plate gave way like opening a door, and the contents of the boiler, water surcharged with steam, and steam expanded in so sudden a manner as to tear all before it.

"Fig. 4 is a perspective view of the interior of the boiler. Fig. 5 shows what remained of the boiler after the explosion."

A very interesting report from an inspector is given of the explosion of a boiler of the locomotive type, in the oil regions of Pennsylvania. It apparently went off like a charge of gunpowder, at 3 o'clock on a Sunday morning. It seems to have been a case of bursting from overpressure simply. Little or nothing was left of the boiler house or boiler. In regard to nests of boilers Mr. Allen says:

"A very dangerous method of setting and connecting boilers is that where two boilers are provided with only one safety valve and yet each boiler is provided with a 'stop valve,' that is, valves so situated that either boiler can be shut off when not in use. The danger here is that when the idle boiler is put into use the attendant will forget or neglect to open the stop valve, and there being no outlet to the one safety valve, the pressure increases until the surrounding metal is unable to resist the internal pressure, and an explosion occurs. Boilers should never be set in this way unless each boiler is provided with its own safety valve, located on the shell of the boiler. We have known of several serious accidents arising from this style of fitting. A case occurred during the past year. The owners of the boilers were substantial men, and had no adequate idea of the responsibility which they incurred. Their attention was called to the danger, and they evidently intended to give it early attention, but failed to do so, and a serious disaster followed.

"Fig. 6 shows the original condition of the boilers. It appears that for some reason one boiler had been shut off, and the steam gauge between the boilers had been removed for repairs. The boiler was fired up, and a destructive explosion occurred. Fortunately, no lives were lost. There are many boilers through the country set in this way, and serious accidents have occurred and will occur so long as this practice is followed. Portions of the boiler were thrown from 300 to 700 feet. Fig. 7 shows the top of the drum, and the manner in which the iron was torn. Fig. 8 shows the rear end of the left-hand boiler, which was thrown some 225 feet. Fig. 9 is the front end of the left-hand boiler."

The report concludes as follows:

"Much might be added to this report which has come up in an experience of nearly twelve years. The dangers incident to the use of steam can in a great measure be removed if steam users will study the matter more carefully. It is always economical to surround boilers with intelligent care and management; to have them set on correct principles, with all attachments and appliances properly located so that especially every safety appliance shall perform its functions freely and unobstructed. The success of this company has been owing in a great measure to the high standard of efficiency maintained by its directors and officers in filling up appointments. And this standard can only be maintained, and steam users and the public faithfully served, by rigidly adhering to the system which was adopted when the company first commenced business."

American Carriage Materials in Foreign Markets.

One of our leading manufacturers of fine varnishes has been gratified within the past few days by receiving an order from Thos. Whittingham & Wilkin, of London, for 1000 gallons, accompanied by the remark that "in view of the high character of the leading English varnishes and the natural reluctance of coach builders in this country to substitute any others for them, especially when not of English manufacture, we think you will hail with satisfaction the inclosed." Ten years ago not a gallon of American carriage varnish was sent abroad, and every leading carriage maker in the United States used English varnish. At the present time nearly all our manufacturers of this class use American varnish, and large quantities are regularly exported to France, Germany and Australia. It is not improbable that England will now be added to the list of our regular customers.

Of wooden carriage materials we are exporting largely. The wheel makers of Derby, England, were the first to import a few logs of American hickory nearly twenty years ago, selling them to various manufacturers. This was the beginning of a trade in which at least ten firms are now engaged, exporting on a considerable scale hubs, spokes, felloes and finished wheels. Australia is our best market in this line, though France, Germany and England are important buyers.

Leather for harness and carriage work, as remarked by one of our principal carriage builders, is being shipped abroad largely, a single firm in Central Pennsylvania sending off some 400 hides per week. Newark sends a good deal of enameled leather and other specialties. A Philadelphia house is beginning to sell glue in considerable quantities, having factories in Newark, Philadelphia and Woburn, with salesrooms both East and West. Some of the tack makers are understood to have a good trade abroad, stimulated, no doubt, by their fine display in the Paris Exhibition. It is said that a New York firm which makes wood materials a specialty sends fully one-half of its product to foreign ports, though widely distributed and in small lots.

The annual report of the Boston and Albany Railroad, shows that the average rate of passenger fares per mile is 2.24 cents in 1878, against 2.31 in 1877 and 2.37 in 1876. The average rate secured for freight of all kinds in 1878 is 1.129 cents per ton per mile against 1.207 a year ago,

Trade Report.

Office of THE IRON AGE,
TUESDAY EVENING, Nov. 26, 1878.

Owing to the occurrence of a national holiday on our usual day of publication, we this week go to press Tuesday night instead of Wednesday night, as usual.

In the financial markets the events of the past week have not been of especial interest. The fact that the law requires the United States Treasury to resume specie payments 36 days hence, naturally exercises a quieting influence upon Wall street and places the great monetary interests in an attidude of expectancy which favors temporary quiet. The action of the banks in other cities shows that some uncertainty exists as to whether Congress will not anticipate the day of resumption by some modification of the law, and in this city some of the leading merchants are said to have under consideration a proposition to stamp on all their bills the words, "Payable in funds current at the New York Clearing House."

In the local money market call loans are freely negotiable at 3 % @ 4 %. The discount rate on prime business paper is 4½ % @ 5 %. Gold remains steady at 100⅛ @ 100¼.

In the bond market governments are strong at an advance of about ⅛ % on the average. The active issues are the 5's and 6's of 1881 and the 4½ per cents. We give below the closing quotations of active shares.

In the stock market there has been a moderate activity, with considerable speculation, with principal dealings in Lake Shore, Western Union, D. L. & W., St. Paul and Northwest. We give below the closing quotations of active shares.

The bank return for the week shows a decrease of $699,175 in surplus reserve, which now stands at $12,206,400, against $10,658,375 at this time last year, and $9,811,800 at the corresponding period in 1876. The loans show a decrease this week of $2,727,800; the specie is down $1,991,000; the legal tenders are increased $650,000; the deposits are down $2,567,300, and the circulation is increased $52,500. The following is an analysis of the bank totals of the week compared with that of last week:

	Nov. 16.	Nov. 23.	Comparisons.
Loans	$237,645,500	$234,910,700	Dec. $2,727,800
Specie	25,405,400	23,414,400	Dec. 1,991,000
Legal t'nd'rs	39,938,200	40,588,200	Inc. 650,000
Tot. reserve.	65,343,600	64,002,600	Dec. 1,341,000
Deposits	209,752,000	207,184,800	Dec. 2,567,300
Reserve required	52,438,025	50,796,200	Dec. 641,825
Surplus	12,905,575	12,206,400	Dec. 699,175
Circulation.	19,909,400	19,961,900	Inc. 52,500

The foreign trade movements are shown in the following tables:

IMPORTS.

For week ended Nov. 23:

	1876.	1877.	1878.
Total for week.	$4,576,918	$4,718,585	$5,369,231
Prev. reported.	253,832,429	286,908,436	252,795,575
Since Jan. 1	$258,409,347	$291,627,021	$258,164,806

Included in the imports of general merchandise were articles valued as follows:

	Quantity.	Value.
Brass goods	38	$4,500
Bronzes	22	5,592
Chains and anchors	1	13
Copper		23
Cutlery	56	24,726
Guns	59	12,348
Hardware	1	120
Iron, pig, tons	300	3,846
Iron, sheet, tons	36	2,923
Iron cotton ties	5,982	5,259
Iron, other, tons	2,215	65,218
Lead, pigs	639	2,890
Metal goods	293	17,053
Nails	2	89
Needles	13	6,570
Old metal		611
Platina	1	1,011
Per. caps	48	6,755
Saddlery	1	40
Steel	623	8,184
Spelter, lbs	22,959	1,004
Silverware	4	419
Tin, bxs	43,826	189,482
Tin, 6,087 slabs	339,608	45,332
Wire	3,018	3,604
Zinc	16,637	821

EXPORTS OF SPECIE.

For week ended Nov. 23:

Total for the week	$71,128
Previously reported	11,462,366
Total since Jan. 1, 1878	$11,533,494
Same time in 1877	24,272,883
Same time in 1876	42,277,213
Same time in 1875	69,098,406
Same time in 1874	48,483,313
Same time in 1873	46,040,628
Same time in 1872	67,091,529

The statistics of exports exclusive of specie for the week ended Nov. 26 were not obtainable at the hour of going to press.

Government bonds close as follows:

	Bid.	Asked.
U. S. Currency 6's	121½	...
U. S. 6's 1881 registered	109⅞	109¼
U. S. 6's 1881 coupon	109	109⅛
U. S. 6's 1865 new reg	103⅝	103¾
U. S. 6's 1865 cou	103⅝	103⅞
U. S. 6's 1867 reg	106⅝	106¾
U. S. 6's 1867 cou	106	106⅛
U. S. 6's 1868 reg	109	109⅛
U. S. 6's 1868 cou	109¼	109⅜
U. S. 10-40 reg	107½	107⅝
U. S. 10-40 coupon	107⅜	107⅝
U. S. 5's 1881 registered	106⅛	106¼
U. S. 5's 1881 coupon	106	106⅛
U. S. 4½'s 1891 registered	104	104¼
U. S. 4½'s 1891 coupon	105⅛	105¼
U. S. 4's 1907 registered	100¼	100½
U. S. 4's 1907 coupon	100¼	100½

The following were the closing quotations of active shares:

	Bid.	Asked.
Atlantic and Pacific Telegraph	28¼	29⅛
Chicago and Northwest	46⅜	46½
" " Pref	77⅛	77¾
Chicago, Rock Island and Pacific	117⅜	117¾
Chicago, Bur. and Quincy	110⅝	111
Col., Chicago and Ind. Central	4⅞	4⅞
Clev., Col., Cin. and Ind	33⅛	33⅜
Cleveland and Pittsburgh	81	81¼
Chicago and Alton	78½	79¼
" " Pref	102	...
Canton	19	23
Delaware, Lack. and Western	48¼	48¾
Delaware and Hudson Canal	42⅛	42¾
Express—Adams	106	107
" American	49¼	49¾
" United States	47	47¾
" Wells, Fargo & Co	98	99
Erie	18⅛	18¾
Harlem	142½	143
Hannibal and St. Joseph	14⅝	15¼
" " Pref	36¼	37¼
Illinois Central	77¾	78
Kansas Pacific	11¼	11¾
Kansas and Texas	6¼	6⅝
Lake Shore	69¾	69¾
Michigan Central	68⅞	69⅛
Morris and Essex	81¾	82⅛
Milwaukee and St. Paul	34⅜	34½
" " " Pref	70	70¼
New York Central	111¾	112
New Jersey Central	30½	31
Ohio and Mississippi	7⅛	7⅜
" " " Pref	16	16¼
Pacific Mail	15½	15⅝
Panama	122	124
Pittsburgh and Fort Wayne	99½	100¼
Quicksilver	10	11
" " Pref	34¼	35
St. Louis and Iron Mountain	15¾	15¾
St. Louis Kansas City Northern	5¾	5⅞
" " " Pref	24⅛	24⅜
Union Pacific	66¼	66¾
Western Union Telegraph	94½	95⅜
Wabash	21¼	...

GENERAL HARDWARE.

The market for General Hardware affords very little material for an extended report this week. The demand for seasonable goods continues to be satisfactory in volume when the lateness of the season is considered.

There is considerable activity in the Nail trade, without any improvement in prices, and we continue to quote 10d. to 60d., $2.10 @ $2.15 per keg net, according to quantity.

The manufacturers of Strap and T Hinges held a meeting in Pittsburgh since our last writing. The attendance was large, and the price which has been ruling, viz., 60 and 10 per cent. discount, was confirmed for the ensuing season.

Wm. & Harvey Rowland, Philadelphia, quote 10 per cent. discount on Eagle Springs on list No. 64, being the only change in their list.

The manufacturers of Augers and Bits will hold a meeting in this city on the 4th proximo.

The Chicago *Tribune* of the 21st instant has the following item: "A special from Wheeling says an infringement suit has been brought against the Buckeye Lantern Company, of Bellaire, Ohio, by the Tubular Lantern Company, of Chicago." It is stated that the suit is an important one, and first-class counsel has been engaged on both sides.

The Vulcan Iron Works, at Richmond, Va., will be sold by public auction at 11 a. m. on Wednesday, December 11, 1878. Further particulars regarding the machinery, tools, &c., will be found in the advertisement among "Special Notices" on the opposite page.

IRON.

American Pig.—Opinions regarding the condition of the market for Pig Iron are somewhat divided, some operators claiming an improved feeling, greater firmness and a decided tendency toward higher prices, while others aver that the same dullness and lack of confidence which has been a prevalent feature for a long time fairly represents the present state of affairs. Sales are reported of 1500 tons 2 X and 300 tons No. 1 Thomas at $16.50 and $17.50 respectively. We also hear of a sale of 1000 tons 2 X, brand not named, on private terms. The Thomas Iron Company have advanced their price to $18 for No. 1, but no sales at this figure are reported, and unless other makers of first-class Iron adopt a similar course it will be difficult to market it at the new figure. We quote: Foundry No. 1, $16.50 @ $17.50; Foundry No. 2, $15.50 @ $16.50, and Gray Forge, $14.50 @ $15.50.

Scotch Pig.—The only business reported is in small lots, the aggregate of which is trifling. We quote nominally: Eglinton, $21; Coltness, $22 @ $22.50.

Rails.—The inquiry for Steel Rails is quite brisk considering the season. The only sale we hear of is a lot of 3000 tons on private terms. We quote for large lots at tidewater, $43. The price at mill is $41 @ $44. In Iron Rails no transactions are reported, and we repeat former quotations, viz., $32 @ $36, according to quality, section, terms, &c.

Old Rails—Are in moderate demand and sales of between 3000 and 4000 tons in lots are reported at about our quotations. We quote as before, $18.50 @ $19.

Scrap.—We hear of a sale of 300 tons No. 1 Wrought on private terms and quote the same from yard, $20 @ $21.

METALS.

Copper.—The market has been quiet, but steady, 200,000 pounds Lake Superior selling at 15⅞¢, at which more would be taken, but holders now insist on 16¢, which is also the nominal quotation for Baltimore. Nothing has transpired in futures, none of which are offered. No telegrams having been received from London, it is to be presumed that there is no change. The cable informs us that there is again some apprehension on the West Coast that the frontier dispute between Chili and the Argentine Republic may lead to war. Should anything of the kind occur, Copper would in some shape or other be affected by it immediately. Manufactured Copper is nominally quoted: New Sheathing Copper, 26¢; Braziers, 28¢, and Bolts, 28¢; American Yellow Sheathing Metal, 13½¢; Yellow Metal Bolts, 25¢, and English Yellow Sheathing Metal, 12⅜¢ @ 12¾¢, currency, in bond.

Tin.—The market here has remained quiet—it may even be called stagnant—at the following figures: Straits, 16½¢ @ 16¾¢ on the spot; near-by afloats, 16¢, and December and January, 15¾¢ @ 15¢; English Refined on the spot, 16¢; ditto Common, 15¢ @ 15¼¢, and Banca nominally 19¢, all large lines. London remains steady at £65 for Straits. Singapore has advanced to $20 ℔ picul. Slight fluctuations here and abroad may be looked forward to in the immediate future, but for some time to come the London speculators will probably have it all their own way. *Tin Plates.*—Mail advices have reached us from London to the 13th inst., according to which the export from England to the United States has been, from Jan. 1 to Nov. 1, 87,782 tons, against 88,342 tons in 1877 and 74,578 tons in 1876. To other countries it was 39,983 tons, against 39,856 and 35,088. They add the following remarks: "The large buyers during the past month have apparently made up their minds very speedily to meet makers half way between their pretension of 15/ a box for Cokes and buyers' limit of 14/, as intimated in our last, and a large business has been done at 14/6, and even at 14/9, and we close with a steady market, general quotation being 15/ for Coke Plates, with occasional orders passing at 14/9." We are quiet here at the following quotations, per box, ordinary brands, large lines: Charcoal Bright, $5.75 @ $6; ditto Ternes, $5.20 @ $5.37½; Coke Tin, $5 @ $5.12½, and ditto Ternes, $4.75.

Lead.—The following have been the sales effected since our last: 500 tons Richmond afloat, due next month, at 3.85¢; 200 tons Selby, on the spot, at 3.87½¢: 100 tons in lots, at 3.90¢, and 100 tons ditto at 3.95¢. There is no more Common Domestic to be had under 4¢. Of fine Lead, sales have been effected at 4.10¢, and further transactions may take place at 4⅛¢ @ 4¼¢, the more so as the freight from St. Louis is higher. The following is from London, dated Nov. 13: "Lead has fallen about £1 on the month, the arrivals being extremely heavy and the home demand dull and unsatisfactory. Stocks continue to increase, and the prospect is anything but a cheering one. We quote L. B. £15. 5/, against £20. 5/ same time last year." The manufacturers here quote their goods as follows: Bar Lead, 5¢; Sheet Lead, 5¾¢. They quote as heretofore, Block-Tin Pipe, 40¢; Tin-lined Lead Pipe, 12¢; Chilled Shot, 8¢; Drop Shot, 6½¢; and Buck Shot, 7½¢. Shot in 5 pound bags costs 1¢ per pound more. They allow the usual trade discount to dealers.

Spelter and Zinc.—The market has been rather dull at 4¾¢ for Common Domestic. We quote Berport Spelter from Lehigh ore, 9¢ ℔ lb, gold. Spelter has declined about 10/ @ 20/ ℔ ton from last month's prices in England. We perceive in our German exchanges that there were rumors of large sales in Silesia not officially reported from Breslau. We quote Silesian nominally here 5¾¢. *Sheet Zinc.*—The market is without feature. We quote: Domestic, 5¾¢ @ 6¼¢, and Mosselman, 7⅛¢ @ 7⅜¢.

Nickel.—There is a fair trade doing in Wharton's at $1.25 ℔ lb.

Antimony.—The market remains moderately active at 12¢ @ 12½¢. There is no change reported from London.

COAL.

The condition of trade to-day was not, from a dealer's standpoint, very encouraging. The reason for this is found in the following figures in regard to the auction sale, for which we are indebted to Mr. F. E. Saward:

The 159th Auction Sale of Scranton Coal. November 26, 1878.

5,000 tons of Steamer sold at an average of	$3.20
15,000 tons of Grate sold at an average of	3.23
10,000 tons of Egg sold an average of	a.23¾
35,000 tons of Stove sold at an average of	3.71¾
10,000 tons of Chestnut sold at an average of	3.07½

Average of Last Month's Sale.

Steamer	$3.45¾	Stove	$4.05
Grate	3.57½	Chestnut	3.31¼
Egg	3.67½		

The average fall in price is no less than 32½ cents. To account for this, coal dealers in Trinity Building give several reasons. They say the uncertainty in regard to whether the combination will be continued next year helped to make buyers uncertain; they add to this the effect of the warm weather, and express themselves as not at all surprised at the turn of affairs, except that they did not think prices would go so low. The combination is as yet somewhat uncertain, although there seems to be little doubt in regard to a new agreement being obtained. There were rumors yesterday that concessions had been made to the Lehigh interest as inducements, while on the other hand certain threats of war had been made in regard to cutting off Lehigh markets. We have little faith in these rumors, which could not be traced to any good authority, but they served to show the uncertainty of the market and how almost any story would be discussed provided it had a bearing upon the results of yesterday's conference. Doubtless the large quota for the month, and the fact that many of the retail dealers do not intend to have any coal on hand by the end of the year, have contributed to produce the decline. At the present time the market is too unsettled to make any conjecture possible in regard to prices.

OLD METALS, PAPER STOCK, &c.

In the Old Metal market Lead, Brass and Copper are in active demand and prices are strengthening. In other stocks we have no material change to report since last week. Messrs. Woodrow & Lewis, auctioneers, will sell on Wednesday, 27th inst. at 12 o'clock, at Nos. 16 and 18 Rose street, the damaged stock of Messrs. Buchanan & Co., caused by the late fire on their premises, consisting of 300 bales of Paper Stock, Paper Shavings, &c.; also a large quantity of Binders' Boards, Manila, Curtain and Hanging Paper, &c.

The purchasing prices offered by dealers for Old Metals are as follows:

Copper, heavy	per lb.	$0.13	@ ...
Copper Bottoms	"	.10½	@ ...
Yellow Metal	℔ lb	.10	@ ...
Brass, heavy	"	.09¾	@ ....
Brass, light	"	.08	@ ....
Composition, heavy	"	.11½	@ ....
Lead, solid	"	.09½	@ ....
Tea Lead	"	.02	@ ....
Zinc	"	.02¾	@ ....
Pewter, No. 1	"	.10	@ ....
Pewter, No. 2	"	.08	@ ....
Wrought Iron	per ton.	$16.00	@ ....
Light do	"	9.00	@ ....
Stove Plate	"	9.00	@ ....
Machinery do	"	11.00	@ ....
Grate Bars	"	3.50	@ ....

The prices current for Rags, &c., are as follows:

Canvas, Linen	per lb.	3 c.	@ 3½c.
" Cotton, No. 1	"	3½c.	@ ....
" " No. 2	"	1½c.	@ ...
White, No. 1	"	3½c.	@ 3¾c.
" No. 2	"	2 c.	@ ....
Seconds	℔ lb.	1½c.	@ ....
Mixed, Woolen	"	2 c.	@ 3 c.
Soft, do	"	6½c.	@ 7 c.
Gunny bagging	"	3 c.	@ ....
Jute butts	"	2¼c.	@ ....
Kentucky bagging	"	3 c.	@ ....
Book Stock	"	2½c.	@ ....
Newspaper Stock	"	1 c.	@ 1¼c.
Waste Paper and Scraps	"	½c.	@ ....
Kentucky Bale Rope	"	4 c.	@ ....
Tarred Shaking	"	1 c.	@ 1¼c.
Grass Rope	"	....	@ 2¼c.

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending Nov. 25, 1878:

Hardware.

Boker Hermann & Co.
Guns, cs., 5
Bloom & Brown,
Cases, 1
Burkinshaw W. C.
Cases, 3
Carey Samuel,
Grindstones, cs., 6
Caswell, Hazard & Co.
Guns, cs., 2
Degraw, Aymar & Co.
Chains, cks., 5
Friedmann & Lauterjung,
Mdse., pkgs., 6
Hayden Peter,
Casks, 1
Cases, 1
Moore's John P. Sons,
Mdse., cs., 1
Empty cartridge cases, cs., 6
Merchants' Dis. Co.
Gun caps, cs., 5
Nails, cs., 1
Mason J. W. & Co.
Wire rope, coils, 8
McCoy & Co.
Mdse., pkgs., 1
Cases, 3
Paillard J. M. & Co.
Ironware, cs., 6
Schoverling & Daly,
Guns caps, cs., 3
Empty c'ridg., cases, cs., 10
Mdse., pkgs., 3
Spies, Kissam & Co.
Mdse., pkgs., 4
Schuyler, Hartley & Graham,
Guns, cs., 3
White E.
Cases, 1
Ward Asline,
Mdse., pkgs., 3
Wiebusch & Hilger Hdw. Co.
Cutlery and hdw., pkgs., 11
Order,
Files, cks., 1
Gun caps, cs., 4
Gun wads, cs., 4
Wire, cks., 1

Iron.

Laman & Kemp,
Bags, 2
Rods, 4
Marvel W. D.
Ore, tons, 300
Moores John P. & Sons,
Bundles, 163
Naylor & Co.
Pig, tons, 200
Outerbridge O. E.
Barrels, 1
Pim, Forwood & Co.
Boxes, 2
Order,
Bars, 170
Spiegel, tons, 125
Sheet, bxs., 47

Steel.

Prosser Thomas & Sons,
Tire forgings, 8
Sanderson G. & Co.
Bundles, 42
Casks, 1
Saxton & Seabury,
Cases, 18
Woodford W. O.
Cases, 22
Bundles, 90
Bars, 6
Order,
Rods, bdls., 121
Bundles, 39
Bars, 23
Coils, 1

Metals.

Brown Bros.
Tin, slabs, 498
Byrne Jos. & Co.
Tin plates, bxs., 576
Bruce & Cook,
Tin plates, bxs., 215
Cort N. L. & Co.
Tin plates, bxs., 2866
Galway & Casado,
Lead, pigs, 300
Hayward R. W. & Co.
Scrap metal, cks., 7
Jex William,
Scrap cop., pkgs., 6
Naylor & Co.
Tin plates, bxs., 3700
Outerbridge H. E.
Cop., bbls., 3
Brass, bdls., 3
Phelps, Dodge & Co.
Tin plates, bxs., 1553
Scheider Jos. & Co.
Tin plates, bxs., 710
Order,
Black taggers, bxs., 200
Tin plates, bxs, 2743

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St.
PHILADELPHIA, Nov. 26, 1878.

The establishment of a new steamship line from Philadelphia to Liverpool is substantial evidence of the steady increase of our export trade. The first vessel will leave Philadelphia early in December, to be followed in quick succession by six others, which are to perform the winter service. Early in the spring the number is to be increased to thirteen first class vessels, to be known as the Blue Line, and it is said will maintain a triweekly service. The establishment of this line, satisfactory as it is in some respects, is not entirely due to a local extension of business, but rather of the through carrying trade, particularly in cattle and grain. To the country at large, however, it will doubtless be of great benefit, as it offers unequaled facilities for handling live stock. The terminus of the line will be at Girard Point, at the junction of the Delaware and Schuylkill rivers, some two or three miles distant from the city proper. The Girard Point Elevator, built by the Pennsylvania Railroad, is said to be one of the largest in the country, while the terminal facilities of the road are unsurpassed, the land on account of its distance from the city having been bought at a very low price. For receiving and shipping cattle and for abattoir purposes there is probably no finer location in the country. The steamers are said to be specially adapted for the cattle trade; they are also fitted up with all the latest appliances for carrying dead meat. We understand that an abattoir is already in course of construction which when completed will have facilities for slaughtering 1500 beeves per week.

Pig Iron.—The market appears to have reached a more settled basis than we have noted for a long time past, and there are evidences of returning confidence which are very gratifying. Good brands appear to have been pretty well cleaned up, and buyers are more anxious to enter into contracts at the figures recently ruling than sellers are to renew them. The same remarks apply to ordinary brands at such prices as 14, 15 and 17 for Nos. 1, 2 and 3, which figures were occasionally accepted for cash lots during the current month. The tendency of the market for the time being may therefore be said to be in seller's favor. At nominal market rates of 15½, 16½ and 17½, however, there is very little business doing, but fifty cents per ton rebate may probably be considered the bottom prices of to-day, at which a considerable amount of iron is changing hands in small and medium sized lots. Buyers are not prepared as yet to enter into any purchases which involve an advance on rates previously paid, but there is a general disposition to duplicate orders given out during the past month or two. Sellers are not offering at such figures, however, consequently the larger operators are holding off, waiting the course of events. We believe we are safe in asserting that up to the 1st of the year the product of all the leading furnaces has been purchased, so that there is not much prospect of lower rates for the present, and it is just possible that prices may stiffen somewhat. An element of doubt with some is in regard to the resumption of specie payments, fears of congressional interference, &c. Then again there are those who think that some of the large lots of Iron held by certain parties may be thrown on the market. The Reading Coal and Iron Co.'s, estimated at not less than 30,000 tons; the lot referred to last week on the Allentown Co's. premises, and similar lots are mentioned in this connection. What the final result will be cannot at the moment be predicted, but even the most conservative men in the trade admit that prices cannot be expected to go much lower, while there are not a few who feel sanguine of a turn for the better. We quote the market steady therefore at following rates: say, Select No. 1 Foundry, $17.75 @ $18.50; ordinary Lehigh brands, $17 @ $17.50; No. 2, $16; Gray Forge, $15 @ $16; White and Mottled, $14. We also note sales of 10,000 tons Bessemer Pig on private terms.

Blooms.—The market is dull and without any appreciable change either in price or demand. Sales in a small way are reported at about quoted rates, but for large lots concessions would be made to secure a purchaser, viz.: Blooms (2464 lb), $38 @ $39; Northern Ore Blooms (2240lb), $33 @ $37; best quality Charcoal Billets (2240 lb), for wire and steel purposes, $58 @ $60; Bars do., $62.50 @ $65; Sheet Iron Blooms, cornered (2464 lb), $53 @ $55, Cold-blast Charcoal Plate Blooms, $50 @ $53; run-out Anthracite, $45 @ $47.50.

Muck Bar.—There is more disposition to buy, but prices are considered too high, and only small transactions are reported, chiefly at inside figure. We quote $30 to $33 for best quality.

Structural Iron.—There is a continued good demand for small and medium sized lots, and the mills make no perceptible reduction in the amount of work on hand. No large orders are reported, and the work connected with the elevated railways is being rapidly run off, but there is an equivalent amount coming in from other sources. Bridge work is looking up again, and the prospects for a steady winter's business seems to be satisfactory. Prices are nominally unchanged, but desirable orders would be accepted at something less than the following quotations, which are the usual asking rates, viz.: Angles, 2.2¢ @ 2.4¢; Tees, 2.4¢ @ 2.5¢; Beams and Channels, 2.7¢ @ 2.8¢.

Plate and Tank Iron.—There has been a trifle more activity during the past week, and although no large sales are reported, a fair amount of business has been entered in small lots. The demand is not pressing, however, and if several of the leading mills had not considerable unfinished work on hand there would be serious complaints of dullness. Prices are steady at former quotations, say: Common Plates, 2.2¢ @ 2.3¢; Tank Iron, 2.3¢ @ 2.5¢; C. No. 1, 2.4¢ @ 2.6¢; Shell Iron, 2.75¢ @ 2.9¢; Flange Iron, 3.7¢ @ 4¢; Solid Firebox, 4.85¢ @ 5¢, and Best Bloom, 5.5¢ @ 6¢.

Sheet Iron.—The demand continues fair for the season, and with depleted stocks manufacturers are not pressing sales. Buyers appear satisfied if they can get their orders filled promptly at current rates, so that there is nothing new to report. Sales have usually been within the range of the following quotations, with the usual concessions to buyers for large lots, prompt cash. We quote: Common Sheet, No. 20 to 23, 2.8¢ @ 2.9¢; No. 24 to 26, 2.9¢ @ 3¢; No. 27 to 28, 3.1¢ @ 3.15¢; Best Refined Sheet, No. 25 to 28, 3.2¢ @ 3.3¢; No. 22 to 24, 3.1¢ @ 3.2¢; No. 16 to 21, 3.0¢ @ 3.1¢; Best Bloom Sheets, No. 25 to 28, 5.1¢ @ 5.2¢; No. 22 to 24, 5¢; No. 16 to 21, 4.7¢ @ 4.8¢; Refined Plates or Blue Annealed, 5-16 to 16, 2.3¢ @ 2.4¢; American, R. G., 5-16 to 16, 2.9¢ @ 3¢; Best Bloom, 5-16 to 16, 4.8¢ @ 4.9¢; A Patent Planished, 10½¢; B Patent Planished, 9½¢; Best Bloom Galvanized, 45 % discount; second quality, 55 %; extra discounts for large lots.

Bar Iron.—There is nothing of importance to note in this department, except that manufacturers are offered a large amount of business if they choose to accept it. Many of the bids have been at lower rates than the general market, consequently we cannot say that sales have been unusually large, although the aggregate is very fair. There is a feeling among merchants and others that good Iron at present prices is a safe investment, any concession therefore from quoted rates is pretty sure to command a purchaser. We understand that the city and local mills are all fairly employed and that prices are well maintained, although in extras there may be some shading done. The immediate outlook is decidedly encouraging, and so long as the Western mills can find a market for their product at a distance from the seaboard there is no reason to expect any weakening here. We quote the market steady at former rates, viz.: 1.5¢ @ 1.6¢ for Common; 1.65¢ @ 1.8¢ for Medium, and 1.9¢ @ 2¢ for Best Refined. There is a disposition to cut in extras, but the above quotations give as correct a view of the market as can be given on average transactions.

Steel Rails.—The market appears to be active and irregular, with a considerable amount of business done at something below the quotations of last week. It is almost impossible to get at actual transactions, but it is acknowledged that special rates have been given in one or two instances on account of favorable deliveries, &c. We understand that some heavy lots have been placed at $42 @ $43 for Western deliveries, and other lots at $41 @ $42 at mills nearer to the seaboard, and still lower prices are hinted at. There is no doubt a very active demand, and it is quite likely that the last two months of 1878 will show the heaviest transactions in the history of the trade, and at prices highly remunerative to the sellers. Prices seem to show a decline of $3 to $4 ℔ ton from the rates current some time ago, but it must be remembered that sales at present prices are materially higher than the average of the year ending with this month, so that the mills will in all probability enter upon the coming year much more favorably than the one now drawing to a close.

Iron Rails.—The market is unchanged, some few orders have been entered during the past week, but nothing of special importance. Prices are steady, and with sufficient work at most of the mills to carry them well into January, there is a disposition to hold firm. It is just possible, however, that they may recede a little in sympathy with Steel Rails, but in the meantime there is no evidence of it. We quote from $33 @ $36, at mill, according to location, section of rail, terms of payment, &c.

Old Rails.—The market is dull and inactive, but with small offerings, prices are not materially changed. Buyers can supply themselves at $19.50 @ $20, but there is no disposition to anticipate their requirements. Prices may be called steady at $10 @ $20, with sales of small lots, chiefly at $19.50 @ $20.

Nails.—The market has been fairly active but prices are no firmer, and although $2.15 is the nominal rate, $2.10 is nearer an average quotation.

PITTSBURGH.

Office of *The Iron Age*, 77 Fourth Avenue, Pittsburgh, Pa., Nov. 26, 1878.

While complaint is still heard on all sides of hard times, and there is no question about their being hard with a great many people yet, it is apparent that general business here in Pittsburgh is better than it has been at any time since the panic. Our railroads and steamboats have about all they can do, and the principal streets present a very animated appearance; the question, however, of capital and labor still remains unsettled, and strikes continue of common occurrence. No sooner was the coal miners' strike over than a strike was inaugurated by the flint glass workers; the "fires" of all the flint works were put out on Saturday last, and there is no telling when they will be lighted up again. This strike, like all others, will no doubt necessitate a great deal of privation this winter, as it will be the means, directly as well as indirectly, of throwing many people out of employment and taking from some their only means of subsistence.

A hopeful feeling prevails in Iron circles; business continues to keep well, and it looks as if better prices would prevail in the spring. If the production of the raw article is not increased to such an extent as to cause a depreciation in value, it is confidently expected that better rates for the products generally will be obtained by the time the spring trade opens up, as the indications are that there will be a largely increased consumption in 1879 as compared with 1878. There are indications apparent now of an appreciation in the Nail market by the 1st of January, and we should not be surprised if an advance in the price of Window Glass was established before many weeks elapse.

Pig Iron.—There is nothing particularly new to record. Business is not as brisk as it was last month, and notwithstanding the fact that the production has been increased somewhat recently by the starting up of some idle furnaces, prices are steady, and for good stock there is no disposition, so far as your correspondent can learn, to make concessions in order to effect sales. The available supply of standard mill Irons, that of all-ore Redshort in particular, is comparatively light and generally in strong hands, and while there has been but little movement in this particular grade of late, there is no evidence of any weakness apparent. True, the consumption is light, owing to the fact that it costs so much more than the commoner qualities, but the mills generally must have more or less of it for mixture, especially those who are tenacious about keeping up the reputation of their products. The outlook, however, is that there will be but little change in values one way or the other during the remainder of the present year; also that there will be a steady consumptive demand during the time in question. Hence the market is in a healthy, but not remunerative condition. The high price of Old Rails is calculated to stimulate the demand for Pig Iron, and then the fact that the cost of production of the latter is more likely to be increased than diminished, as both coal and coke are tending upward, leads to the belief that raw Iron is a safe investment at current rates. Bituminous Coal Smelted Iron is still quoted at $19 @ $20, 4 mos., for Foundry, and $17.50 @ $19.50 4 mos., for Mill, the outside figure for all-ore Red Short. Coke Irons, $16 @ $16.25, cash, and $16.50 @ $17, 4 mos., for mill; sale of 1000 tons at $16.50, 4 mos. Charcoal Irons continue quiet; No. 1 Foundry, $24 @ $25, 4 mos., and No. 2 do. at $22.50 @ $23.50. Sales of 40 tons Cold Blast at $30, 4 mos., and 100 do. do. at $30.50, cash. Bessemer is still reported quiet and unchanged at $20, 4 mos.

Manufactured Iron.—While the tone of the market is possibly a little easier, owing to a falling off in orders, as is usually the case at this particular time, the mills generally have about all they can do. Some of them are sold considerably ahead of their productions, and here in Pittsburgh, so far as we can learn, there is no disposition to cut prices; but for fear it might increase production by starting up some of the idle mills, an attempt would no doubt be made to establish an advance on current rates, which, while better than they were during the summer, are far from being satisfactory to manufacturers, as they afford, if any, a very small margin for profit. Merchant Bars are still quoted at $1.75, 60 days; Sheet, $2.75, 60 days, for No. 24, and Hoop, at $2.40 @ $2.50.

Nails.—The present status of the market remains much the same as noted in our report of last week. Business is dull, not for want of orders, but because our manufacturers are refusing to meet competition at current rates. Some makers have virtually been out of the market for several months, while others are supplying only the immediate wants of regular customers. It may appear strange, yet it is a fact that Nails are being brought here from Wheeling and sold to jobbers for less money than Pittsburgh manufacturers are willing to sell at. It is not claimed that Wheeling can make Nails any cheaper than Pittsburgh, nor is there any reason why she should, yet so anxious are some of the factories there to effect sales that they are willing to accept cost. However, the indications are that there will be a general advance in the West, possibly by the 1st of January next—at all events, before the spring trade opens up; and it is doubtful whether contracts could now be made for round lots, either for present or future delivery, at current unremunerative rates. Prices may be quoted nominally at $1.90 @ $2, 60 days, with 2 % off for cash.

Rails.—The market for Steel Rails is still reported steady at $44, cash, delivered free on cars in Pittsburgh. The Edgar Thomson Company are about sold up until the close of the year. New Iron Rails, $32.50 @ $35.50, according to terms and delivery. In regard to old Iron Rails the market continues in rather a peculiar condition; the supply on sale is light, and while a good quality cannot, it is said, be laid down here under about $24, there are, so far as we can learn, no buyers above $23 for the best quality, and buyers threaten that rather than pay above the figure in question, they will quit using them and go back to Pig Iron again, which it is argued is now the cheaper, relatively, of the two.

Steel.—The market remains much the same as noted for some weeks past; business is only fair, and with an active competition prices favor buyers; Tool Steel, 10½¢ @ 12½¢; Machinery do., 4½¢ @ 7¢; Tire Steel, 3½¢ @ 6¢; Plow do., 4¢ @ 7¢; Spring Steel, 3½¢ @ 6½¢; Boiler Plate, 6½¢ @ 7½¢. Steel Billets, $45 @ $47.50 ₱ ton; Steel Blooms, $42; Steel Rail Ends and Steel Bloom Ends, $30.

Wrought-Iron Pipe.—Business continues dull, with but little prospect of any improvement now until the spring trade opens. Discounts on Gas, Water and Steam Pipe, 60 to 65 %; on Boiler Tubes, 40 %. Owing to the depression in the oil business there is a very limited demand for oil-well casing or tubing. Wherever it can be done, old casing and tubing are being used in new wells in order to save expense. At best there is very little encouragement to put down wells, as oil is scarcely worth anything.

Scrap.—There is a fair business, and prices are steady. Dealers allege that it is too low here as compared with cost at sources of supply. We repeat last week's quotations: Car Springs, net, $30; Car Axles, $27 @ $28; Boiler Scrap, $21 @ $22; No. 1 Railroad Wrought, $21 @ $22; Wrought Turnings, $14 @ $15; Blacksmith, $20; Old Car Wheels, gross, $18 @ $19; Cast Borings, $10 @ $10.50.

Coke.—At no time, perhaps, in the history of the trade has there been such an inquiry for Coke as at the present; large shipments are being made in all directions, both by river and rail; every oven is employed, and within the past week an advance of 10¢ @ 15¢ ₱ ton has been established. We now quote at $1 @ $1.05 ₱ ton delivered on cars at the mines. Some 65 to 75 cars per day are being shipped eastward, a large proportion of which goes into the anthracite regions. It is said that a movement is on foot looking to a consolidation of the entire Coke interest, something similar to the Standard Oil Company, and if it is effected a very decided advance in price will no doubt be made.

Coal.—The river during the past couple of days has been in excellent condition for sending out Coal, and some 6,000,000 bushels have already been started, mostly for the Cincinnati and Louisville markets, and the probability is that the quantity will be largely increased before the close of the week. Coal is better in nearly all the down-river markets, and there is a better feeling here in consequence. The miners are pretty generally at work at the recent advance, 2½¢ ₱ bushel.

Window Glass.—There is a very fair business for the season, but no improvement in prices, which to manufacturers continue very unsatisfactory. Discounts for car-load lots still quoted at 75 and 5 to 75 and 10. Stocks small and production light as compared with what it usually is at this particular time.

CHATTANOOGA.

Office of *The Iron Age*, Market and 8th Sts., Chattanooga, Nov. 23, 1878.

Our last report was dated Sept. 21 and was printed in *The Iron Age* of the 26th. From the date of that report until Nov. 1 the manufacturing and general business of the city was suspended. The revival has been rapid and satisfactory. Everything is going now, and general trade shows signs of improvement daily. The Iron business looks more hopeful than it has for some time. Both crude and finished Irons are in fair demand and prices rule stiff. Inquiry from the South for various supplies are coming in steadily. Trade with that quarter will probably be better this winter than it has been for several years. The Mississippi Valley raised more cotton, corn and sugar this year than it has any year since the war, and they are less in debt down there than they used to be. They therefore have more money for the purposes of trade, building and manufacturing purposes. Orders from the North and Northwest have resumed since the epidemic disappeared, with prospects of an increased trade in that direction. The weather, the first days of the week, was wet and nasty. It closes with frosty nights and bright sunshiny days.

Pig Iron.—We make no change in our last figures, though holders are very firm. Stocks are pretty full. Orders come in as freely as the trade has a right to expect, and constant improvement in the tone of the market is noted by furnacemen and dealers. We quote: Coke Irons, No. 1 Foundry, $17.50 @ $18; No. 2, $15.50 @ $16; Gray Forge, $13.50 @ $14; White and Mottled, $11.50 @ $12. Hot-Blast Charcoal—No. 1 Foundry, extra, $20 @ $21; ditto, $18 @ $20; No. 2 Foundry, $16 @ $18; Gray Forge, $15 @ $17; White and Mottled, $15. Cold Blast Charcoal—Car Wheel Metal $22.50 @ $27.50; do., Extra Standard, $24 @ $20.50; Forge, $17 @ $22.

Muck Bar—$27 @ $34. Old Rails, $18 @ $18.50. Old Car-wheels, $18.

Ores.—Brown Hematite, 50 to 56 %; per ton, $1.75 @ $2.25. Red Fossiliferous, 50 to 56 %; per ton, $1.70 @ $1.90. The above prices for ores delivered in Chattanooga on cars or on the wharf from flat boats.

Nails.—The market is demoralized, as usual. The Western Associated Mills are quoting them to customers throughout the South at from $1.80 @ $2 rates, at the mill. Memphis and all the towns and cities along the lower Ohio and Mississippi are "full" of Wheeling and Pittsburgh Nails, which are freely offered at prices that will not net the makers as much as they ought to get for Bar Iron. This sort of "jayhawking" will probably go on as long as several receivers in charge of Western Associated Mills can keep afloat. But there can be but one end if it is persisted in. The mills here have been retrenching in every way possible, and still manage to remain in the market without actual loss. We quote at $2.25 rates, with usual deductions on large lots.

Manufactured Iron.—Business is good. Orders come in freely. If the present demand shall increase a little, a slight advance on Merchant Bars is certain to occur. Railroad supplies are in good demand at quotations. The mills are all running full time, and have at least three months' business ahead. Bar we quote at $2; Railroad Spikes, $2.50; Light Rail, $2.25; Track Bolts, $3; Trestle Bolts, $4.

Coke.—The Southern States Coal, Iron and Land Company, at their Victoria Mine, are turning out a splendid washed Coke. It is quite equal to the best made in this country. We quote at $2.50 per ton on cars at Chattanooga.

Coal.—The market looks well for consumers. Consumption will probably be large, but the competition is so sharp that prices will be maintained at rates allowing but small margin to miners. We quote run of mine at $1.50 @ $1.75 per ton on cars in Chattanooga; strictly Lump for household use, 12½¢ @ 14¢ per bushel delivered.

Pig Lead.—Local mines are now furnishing full supplies of Lead in car-load lots and of excellent quality. We quote it at 4¢, which is an advance of $5 per ton on the old rate.

Ingot Copper—Is slightly better in price and demand than it has been. We quote at 18¢.

Iron Rails.—Inquiries have been made for large lots, but mill men and purchasers differ slightly in their views. We quote them at $34 per ton, with a fair demand.

The Metal and General Trades in the South.

The Iron business, which was completely suspended from Sept. 20 to Nov. 5, begins to show at least usual activity. The mills are all going. Orders come in pretty freely, though Southern consumers and dealers are feeling their way back to full business prudently and conservatively.

There has been a slight advance established on some items of material, and all articles are at least stiff at the quotations which ruled before the suspension. Old Rails are scarce and higher. Ingot Copper has appreciated in price. Pig Lead is being supplied in large lots by local furnaces. It has advanced $5 per ton, car-load lots, and is now offered here at 4¢ ₱ lb. Merchant Bars are slightly better than in September. In a general way, Iron men recover confidently on a substantial advance on all crude and finished Irons. New Iron Rails show a tendency upward. The mill here is working on several small orders. Inquiries for considerable quantities have been received, but makers and purchasers are slightly apart in their views. The Steel furnaces at the Roane Mills are at work. Their blooming train, work on which has been suspended, will be in operation in a few days. They have accumulated a considerable stock of ingots. Their reheating furnace is complete. By December 10 this mill will be turning out an article of Steel which will be creditable to the enterprise of its proprietors.

The blast furnace at this point was banked in some 30 days. The blast was put on about Nov. 1. The furnace is running on Steel Pig, making an average of 25 tons daily. Rising Fawn Furnace, Ga., is and has been for several weeks making foundry. It is now producing an average of 35 tons daily. The management will find it necessary to blow out about Jan. 1 to renew the bosh. Cherokee (charcoal) is the only furnace in Georgia besides Rising Fawn now in blast. It will be blown out in about a month, when new bosh, hearth and linings will be put in. The material for the renewal is being furnished by the Laclede Works, St. Louis. It is now in this city *en route*, and is certainly an exceptionally good lot. Axmoor (coke) and Woodstock, Shelby and Alabama (charcoal), in Alabama, are in blast. Rockwood, Roane county, Tenn., is blowing one furnace, producing foundry Iron. Stocks of Pig metal are pretty full, but holders are quite confident and they hold firmly.

The general business outlook is fair. Merchants were not seriously hurt by the suspension caused by yellow fever. Extensions by Eastern jobbers were liberally proffered to all deserving and prompt buyers, and they find their credit unimpaired.

In other cities in the fever district the commercial tone is one of hope and cheerfulness. Memphis will do rather more than the usual annual cotton business, brokers and compress men there predicting a trade of close upon a million bales. Picking has been pushed forward rapidly since fever abated, and very little lint will be lost. Best estimates put the crop at 5,500,000 bales, the largest ever produced.

Considerable building is now projected or in progress in Chattanooga. The Wildberger, Peyer & Co. cotton mill is the most important. As noted in *The Iron Age* in October, this mill was destroyed by fire when the epidemic was at its hight. Rebuilding will be commenced early next month. The new mill will be on a considerably enlarged scale.

The local grain and provision trade of the Tennessee Valley does not promise to be heavy this season. Crops generally were light, and as prices are ruling low farmers will drib out their surplus, hoping for an advance which is not likely to come. Corn is now quoted in this market at 50¢ and wheat at 90¢ ₱ bushel.

As to health, this city and the entire Tennessee Valley are as healthy as I ever saw them in a residence of 15 years. All our sickness has disappeared as if by magic. The total number of yellow fever cases in this city up to date is 498; total deaths, 161; run of fever, 50 days. Our percentage of deaths on the list of attacks does not vary much from that of other infected cities. Our proportion, both of cases and losses, population considered, is less than one-fifth that of the lightest epidemics in the immediate valley of the Mississippi, and in some instances it is not one-tenth so great. The fever incubated here in from nine to fourteen days after infection. The period at points further West was from three to five days. These facts show that yellow fever is not "at home" in this valley, and will be easily prevented in the future.

BOSTON.

Nov. 23.—*Pig* is extremely dull and inactive, and there are rumors that more heavy failures of blast-furnace people are imminent. At the shipping ports, Foundry No. 1 is quoted at $16.30 @ $17; Foundry No. 2, $15.50 @ $16.50; Gray Forge, $14.50 @ $15.50. There is nothing new in the market for Scotch Pig. Eglinton is held at $22.50, Glengarnock at $24, Gartsherrie at $25 and Coltness at $26. There has been considerable inquiry for Steel Rails for early deliveries, and the mills report that they are full of orders. We quote $43 at tidewater, and $41 @ $44, at mill. Iron rails are held all the way from $32 @ $36. Nails have been in fair demand, jobbing now at $2.25 @ $2.30. For 100-keg lots $2.20 is the price. Sheet is selling at 3¢ @ 3¼¢ ₱ lb. Russia is quiet at 10¾¢ @ 11¢. We quote English Spring Steel at 7¢ @ 8¢, gold; 9¢ @ 11¢ for German; 9¢ @ 11¢ for Machinery; 14¢ @ 15¢ for Cast; 10¢ @ 12¢ for Blister; 8¢ for American Spring; 13¢ @ 13¾¢ for Cast; 9¢ for Blister, and 7¾¢ @ 8¢ for Machinery. Manufacturers of horse Nails state that there is a firmer feeling in the trade, owing to the prospect of an advance in prices in January next, if not sooner. In Plate Iron there continues to be a fair degree of activity in Tank, which is selling steadily at 2¼¢. Boiler Plate is very dull, quoting 2½¢ for No. 1 Charcoal, 2⅝¢ @ 2¾¢ for No. 1 Shell, and 3¾¢ for Flange. Merchant Bar jobs at $1.70 @ $1.75. The Bulgarian, from Liverpool, brought 2944 bars iron, Blake Bros. & Co.; 4967 bars iron, Kidder, Peabody & Co.; 576 coils wire rods; 53 bars iron, Brown Bros. & Co.; 2636 bars and 692 bundles iron, Thayer & Lincoln; 40 cases and 51 bundles steel, order. The Victoria, from Liverpool, brought 200 bundles steel, Fuller, Dana & Fitz. The brig T. Remick, from Rotterdam, bought 100 bundles steel, Jere Abbott. The steamer Sorrento, from Hull, brought 1762 coils wire rods, 1837 bars iron, Naylor & Co.; 1 bundle round iron and 2 bars iron, Fuller, Dana & Fitz; 10 bundles iron, and 1 bundle wire rods, C. G. Lundell; 5744 bars iron, order. The Bulgarian, from Liverpool, brought 90 cases Yellow Metal Sheathing, Willett, Hamlem & Co. For manufactures we quote: New Sheathing at 24¢ @ 26¢. The outside price rules in small transactions, but large buyers are purchasing at the inside figure. Bolts are quoted at 26¢ @ 28¢. Yellow Metal Sheathing continues very weak, quoting 12¾¢ @ 13¢ for English, and 13¢ @ 13½¢ for American; Yellow Metal Bolts, 18¢ @ 20¢. *Lead* is under speculative control, and another slight twist in prices has taken place. We quote: Pig, 4¢, currency; Sheet, 5½¢; Pipe, 4¾¢; Tin-Lined Pipe, 12¢; Bar Lead, 4¾¢; all of these excepting Pig are subject to the usual trade or 10 % discount. *Antimony* is firm and fairly active, and we quote 12¢ @ 12½¢. *Spelter* continues firm, with little disposition on the part of buyers to sell on the spot at less than 4¾¢ @ 5¢ for 10-ton lots. *Tin* shows very little change either way during the week. The Victoria, from Liverpool, brought 200 boxes tin plates, B. Austin & Co. The Bulgarian, from Liverpool, brought 460 boxes tin plates, order. We quote: Straits, 16½¢ @ 16¾¢; Banca, 19¢; Refined English, 16¢ @ 16¼¢, gold. We quote Plate: Charcoal, I. C., $5.75 @ $6; Coke, $5 @ $5.25; and Charcoal Terne, $5.40 @ $5.50, gold.—*Commercial Bulletin.*

LOUISVILLE.

Messrs. Geo. H. Hull & Co., under date of Nov. 25 write us as follows: The market is very firm, and has a strong upward tendency. The usual time, 4 mos., is allowed on the quotations below:

FOUNDRY IRONS.	
No. 1 Hanging Rock, Charcoal	$21.00 @ 22.00
" 2 " "	19.00 @ 20.00
No. 1 Southern, Charcoal	18.00 @ 18.50
" 2 " "	16.50 @ 17.00
No. 1 Hanging Rock, Stonecoal and Coke	19.00 @ 20.00
No. 2 Hanging Rock, Stonecoal and Coke	18.00 @ 18.50
No. 1 Southern, Stonecoal and Coke	18.50 @ 19.00
No. 2 " "	17.00 @ 17.50
"American Scotch"	18.00 @ 19.00
Silver Gray	16.00 @ 17.00
MILL IRONS.	
No. 1 Charcoal, Cold-short and Neut'l	16.50 @ 17.00
No. 1 Stonecoal and Coke, Cold-short and Neutral	16.50 @ 17.00
No. 2 Stonecoal and Coke, Cold-short and Neutral	15.50 @ 16.00
No. 1 Missouri and Indiana Red-short	20.00 @ 21.00
White and Mottled, Cold-short and Neutral	14.50 @ 15.00
CAR WHEEL AND MALLEABLE IRONS.	
Hanging Rock, Cold-blast	29.00 @ 33.00
Alabama and Georgia, Cold-blast	28.00 @ 29.00
Kentucky, Cold-blast	25.00 @ 30.00

CINCINNATI.

Messrs. E. L. Harper & Co., under date of Nov. 23, write us as follows: The demand continues good, and the aggregate business this fall will show a decided improvement in quantity over the same period last year. The Iron sold is almost, if not entirely, for actual consumption (there being very little speculative demand), so that the surplus of sales over-production has been and is steadily reducing the large stocks that for so long a period have had a lanquid influence upon the market. The supply of Old Rails and other grades of good Scrap is also much lighter, being another favorable circumstance. On all accounts it seems reasonable to expect the market will be in a more satisfactory condition the coming year. The way furnacemen can prevent this is by starting up before there is a positive demand for their products, but their experience of the evil effects of overproduction has been so sharp and long continued that they generally appear to realize the undesirableness of being instrumental in again producing the same state of things. Prices unchanged:

HOT-BLAST FOUNDRY.	
Hanging Rock C. C., No 1	$21.00 @ 22.00
" C. C., No. 2	20.00 @ 20.50
Alice, No. 1 Extra, L. M.	21.00 @ 22.00
" No. 1 " N. O.	20.00 @ 21.00
" No. 1, N. O.	20.00 @ ....
Hanging Rock Coke and S. C., No. 1	18.00 @ 20.00
" " S. C., No. 2	16.00 @ 18.00
Virginia Coke, No. 1	19.50 @ 20.00
" No. 2	17.50 @ 18.00
Shawnee S. C., No. 1	18.50 @ 19.50
" S. C., No. 2	16.00 @ 17.00
Hocking Valley S. C., No. 1	19.00 @ 19.50
" S. C., No. 2	16.00 @ 17.00
FORGE IRONS.	
Hanging Rock, No. 1 C. C.	19.00 @ 19.50
Hanging Rock, No 1 Coke	16.50 @ 17.00
Longdale, No. 1 Coke	17.00 @ ....
Ala. and Tenn. No. 1 C. C.	17.00 @ ....
Red-short, No. 1 Coke	18.50 @ 19.50
Cold-short, No. 1	15.50 @ 16.00
Old Rails, prime, cash,	..... @ .....
CAR WHEEL AND MALLEABLE.	
Hanging Rock C. B.	30.00 @ 31.00
Cherokee C. B.	28.00 @ .....
Southern and Western Brands	28.00 @ 30.00

ST. LOUIS.

Specially reported by Messrs. Spooner & Collins, Iron Commission Merchants, 217 North Third street, under date of Nov. 21: Our market is the same as last reported; demand fair. Prices for standard brands are still held firm at quotations; some few cheap irons are still offered, but the quality is very inferior. Old Rails are very scarce, demand fair, and there are prospects of an increase in prices:

COLD-BLAST CHARCOAL—All Numbers.		
Hanging Rock	4 mos.	$23.00 @ 25.00
Tennessee	4 mos.	22.00 @ 23.00
Kentucky	4 mos.	22.00 @ 23.00
Missouri	4 mos.	22.00 @ 23.00
Georgia	4 mos.	22.00 @ 23.00
Alabama	4 mos.	22.00 @ 23.00
Assorted Bar Iron		1.95 rates.
No. 1 Wrought Scrap	₱ cwt.	.90 @ ....
Heavy Cast Scrap	"	.65 @ ....
Light "	"	.40 @ ....
Old Rails, ₱ ton	4 mos.	20.00 @ 21.00
Old Car Wheels, ₱ ton	4 mos.	17.00 @ 18.00

	No. 1.	No. 2.	Mill.	White and M't'l.
Missouri Stone Coal	$21.00	$20.00	$19.00	$17.00
Missouri Charcoal	20.00	19.00	18.00	.....
Tenn. Charcoal	20.00	18.50	17.50	.....
Tenn. Coke, very soft and strong	20.00	19.00	17.00	16.00
Hang. Rock Charcoal	22.00	20.00	19.00	.....
Hanging Rock Cold-short	.....	.....	.....	.....
	Extra		B	
Alice Hanging Rock Coke	No. 1.	No. 1.	No. 1.	No. 2.
Moxahala Blackband Ores	22.00	21.00	19.50	19.00
	21.00	20.00	19.50	18.00

BALTIMORE.

Mr. W. N. Wyeth, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following prices under date of Nov. 25: Trade the past week has ruled quiet, and the situation is dull and nominal, but values remain firm and unchanged.

Refined Bar Iron, 1 to 6 wide by ¾ to 1 thick	₱ lb	1.85 @ 2	¢			
Refined Bar Iron, 1 to 4½ wide by 1½ to 2 thick	"	1.85 @ 2	¢			
Refined Bar Iron, ¾ to 2, Round and Square	"	1.85 @ 2	¢			
Hoop iron, 1¼ wide and upward	"	2½ @ 2¾	¢			
Band Iron, from 1¼ to 4 in. wide	"	2¾ @ 2½	¢			
Horse-shoe Iron	"	3 @ 3½	¢			
Norway Nail Rods	"	4¾ @ 5¼	¢			
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes	"	13 @ 14	¢			
Machinery Steel	"	8 @ 10	¢			
ast Spring Steel	"	6 @ 6½	¢			
Homogeneous Steel Plate	"	7 @ 7½	¢			
Common Horse Nails	"	13 @ 16	¢			
R. R. Spikes, 5½x9-16		2½¢ @ 2¾	¢			
Perkins' Horse shoes, ₱ keg of 100 lbs		$3.62½				
" Mule shoes		4.62½				
	10	9	8	7	6	
Putnam Horse Nails, ₱ lb	18	19	20	21	23¢	
Globe Horse Nails, ₱ lb	18	19	20	21	23¢	

Less list discount to the trade.

Messrs. R. C. Hoffman & Co., Iron and Commission Merchants, No. 23 South Frederick street, report the Pig Iron market as follows, under date of Nov. 25: The demand for Iron continues firm, and prices unchanged. We quote as follows:

Baltimore Charcoal Pig		$26.00 @ 28.00
Virginia " "		26.00 @ 28.00
Anthracite No. 1		19.00 @ 20.00
" No. 2		18.00 @ 19.00
" No. 3		16.00 @ 17.00
" Mottled and White		13.00 @ 14.00
Charcoal, C. B. Blooms		50.00 @ 52.00
" " Billets		52.00 @ 55.00
Refined Blooms		43.00 @ 45.00

RICHMOND.

Mr. Asa Snyder, Iron Merchant and Furnace Agent, writes as follows under date of Nov. 25: Market for all grades of Pig Iron quiet. Old Rails and Wrought Scrap continue in fair demand. I quote as below:

American Scotch Pig Iron		$21.50 @ 22.50
Anthracite, No. 1		19.00 @ 20.00
" No. 2		18.00 @ 19.00
" No. 3		17.00 @ 18.00
" Mottled		14.50 @ 15.50
Coke, No. 1		19.00 @ 20.00
" No. 2		18.00 @ 19.00
" No. 3		16.50 @ 17.50
Va. Cold-blast Charcoal, Cold-short		20.00 @ 23.00
Va. " " Neutral		27.00 @ 28.00
Va. Warm-blast " Cold-short		18.00 @ 21.00
Va. " " Red-short		17.00 @ 18.00
Old Rails		17.00 @ 18.00
Wrought Scrap No. 1		16.00 @ 17.00
Cast " (machinery)		15.00 @ 16.00
Richmond Refined Bar Iron		sc. @ ....
Horse Shoes per keg		... @ 4.00
Mule " "		.... @ 5.00
Old Dominion Nails, Standard Size, ₱ keg		2.25 @ ....

Freights to Philadelphia, $1.40 per ton of 2240 lbs., by sail.

Freights to New York, $1.60 per ton of 2240 lbs, by sail.

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels.)

Paris, Nov. 10, 1878.—*Metals.*—We are now fast approaching the dull winter season, and business in metals as well as in other goods is beginning to feel the effect of it. *Copper.*—The market here has been firm but quiet. The tendency is a favorable one in sympathy with London. We quote Chili Bars, 150 francs the 100 kilos; Common ditto, 145; Ingots, 160; English Tough Cake, 160; Best Seclected, 162.50, and pure Corocoro Ore, 157.50. Havre is steady; they quote first brands Chili Bars, 148.75 @ 150; good current ditto, 146.25 @ 147.50, and Lota and Urmeneta, 145. Paris conditions. Marseilles remains well supported. They quote Spanish in Slabs, 150; Red Tokat, 155; Small Refined Ingots, 175; Sheathing, 187.50; Bolts, 195; Yellow Metal Sheathing, 180. *Tin* has advanced 15 francs. We quote Banca, 165 francs the 100 kilos; Straits, 157.50; Billiton, 157.50, and English, 170. The same buoyancy noticeable here has taken hold of the Marseilles market and quotations there are on a par with ours. *Lead.*—Although this metal has been on the whole inactive prices have been well sustained. We quote all descriptions 25 francs at Paris. At Havre First Fusion Soft Spanish remains at 41 @ 41.50 francs. Marseilles is firm. They quote First Fusion Soft, 37 @ 37.50 francs the 100 kilos; Second ditto, 36.50; Pipe and Sheet, 42, and Shot, 42.50. *Spelter* has on the whole been steady. We quote Silesian deliverable at Havre 46; other good brands there and here 46. Marseilles is quiet; they quote Vieille-Montagne and Southern, 56 francs the 100 kilos less 2 %, and Old Remelted, 42. Havre quotes Silesian Spelter 46 @ 47 francs. *Iron.*—The continual offers coming from the Northern blast furnaces leave prices here with a weak tendency. Merchant Iron at the works is obtainable at 145 francs and at 155 francs here. At these rates there is a large sale, building being quite active, and for the same reason Iron Pipe sells with the greatest ease. In the Champagne

district hardware manufacturers have a good run of orders and are a great deal better off for the time being than the rolling mills. It may be put down for certain that the latter are making no profits at present. Stove manufacturers, on the other hand, are enjoying a fair amount of activity. In the Haute-Marne the Iron market is very much depressed. Nothing new has occurred in the situation of Pig Iron in the Nancy basin. Affinage Pig iron varies there between 56 and 57 francs. There are a good many rumors on foot about contemplated changes in the management of various prominent works in that region, but as long as nothing positive is shown there is no perceptible effect on the policy pursued by other establishments as regards prices to be adhered to in that region. *Coal.*—The Coal market is not in a satisfactory condition. The rolling stock on some of the lines is short, and the consequence is that Coal cannot be dispatched to the places of consumption as fast as should be the case, causing great irregularities in prices.

BELGIUM.

(Revue Universelle).

BRUSSELS, Nov. 10, 1878.—*Iron.*—The unsatisfactory condition of the Iron trade in England has the effect of weighing down the Continental markets also, and ours is in a pitiful plight. An order for 50 tons Iron is looked upon as a miracle just at present, and small orders are eagerly received. What demand there is is principally for Iron for architectural purposes. Many works have exhausted their resources, and this leads to forced sales of frequent occurrence, demoralizing the general market. The solvent concerns are doing their best to bridge over into the new year without shutting down, and are content to fill what small orders they can obtain, thus keeping up a show of activity with a reduced number of operatives. Whenever a larger contract is to be placed on the market, and the competition of makers is invited under adjudication or otherwise, there is a perfect scramble to get it, and twenty firms are on hand to outbid each other in cheapness. The Republic of Costa Rica is in the market for Iron railroad bridges, and will probably get them on very reasonable terms in view of the deplorable state of our Iron industry. There has been an increase of import into Belgium of 1,497,000 francs in Iron Ore and Scrap Iron during the past nine months of the year as compared with the same period of 1877, and of 2,061,000 francs in Pig, while there has been an excess of export of 11,496,000 francs in Sheet and all Wrought Iron, but a decrease in the export of Iron Rails of 1,214,000 francs. *Coal.*—The only demand for Coal noticeable for the moment is for household purposes and our sugar refineries. For general industrial purposes the market is flat. Belgium has exported during the first nine months 4,368,000 francs worth of Coal more than during the corresponding period of 1877.

GERMANY.

(Borsenhalle.)

HAMBURG, Nov. 9, 1878.—*Metals.*—It is a fact worthy of notice that at a time when European industry seems to be worse off than at any previous time this year, speculators should be carrying out an upward movement in some leading metals with undeniable success and some prospect of prices being maintained. As yet this movement has been viewed with suspicion in Germany, but as prices are steady in Holland and England consumers come forward and reluctantly subscribe to the advance for their current wants. *Copper.*—Berlin is steady at the recent improvement, and quotes good qualities English and Australian 66 @ 70 marks the 50 kilos., and Refined Mansfield, 70 @ 70.50. We are firm here, and quote as follows: Drontheim, 70 marks the 50 kilos.; Minnesota, 85; English, 67.50 @ 68; English Sheathing Copper, 76 @ 77, and ditto Yellow Metal Sheathing, 63 @ 64. Stettin is sustained. They quote Swedish, English and American, 72 50. *Tin.*—Our markets are gradually stiffening in sympathy with London, and we quote here: Banca, 65 @ 66 marks the 50 kilos.; and English, 65 @ 69. Berlin maintains last week's rates, quoting Banca 63 @ 64 marks, and English 61.50 @ 62. *Lead.*—Although inactive, the German markets have remained firm, ours included. We quote here: English Pig, 18 @ 18.30 marks the 50 kilos.; Sheets, 18.50 @ 19; German Pig, 17 @ 17.50; Spanish, 19 @ 19.50; English White Lead, 33; and Dutch ditto, 33.50. No special feature is reported from Berlin, where Tarnowitz, Hartz and Saxonian command 16.75 @ 17 marks the 50 kilos. *Spelter.*—The market here has been tolerably well sustained, although lacking activity. We quote: Silesian, on the spot and to arrive, 18.50; ditto Sheet Zinc, 23.50; Vieille-Montagne ditto, 23.80; ditto for sheathing vessels, 25.80; Zinc White, 25 @ 28; ditto Gray, 25.50; and dark ditto, 29.50. Berlin is steady at 18 @ 19 marks the 50 kilos. for Silesian. Breslau is quiet; common brands there, 16.80 marks; W. H., 17; and Godulla, 17.

HOLLAND.

(Koch & Vlierboom.)

ROTTERDAM, Nov. 12, 1878.—*Tin.*—The government has just published the official figures relating to the Tin export:

EXPORT OF TIN FROM HOLLAND.

	July.			Seven months.		
	1878. Tons.	1877. Tons.	1876. Tons.	1878. Tons.	1877. Tons.	1876. Tons.
Germany	304	315	451	2,327	2,218	2,373
England	48	20	7	121	301	45
Belgium	116	185	332	1,005	1,158	1,517
France	54	55	76	286	469	401
Hamburg	45	58	66	438	342	284
Unit'd States	..	2	6	10	57	40
Other c'tries	63	64	73	347	352	327
Total	630	719	1,011	4,534	4,857	4,987

The market is steady at 38.50 guilders for Banca and 37.50 for Billiton the 50 kilos.

AUSTRIA.

(C. Ernst.)

VIENNA, Nov. 7, 1878.—*Metals.—Copper.*—This metal has been looking up in consequence of curtailed production in most quarters. Prices have been so unprofitable of late that the necessity of reducing the output has become imperative. But for its profitable simultaneous silver production Mansfield would have ceased to turn out any Copper long ago. Mansfield sold here at 81 @ 84 florins the 100 kilos., and prime Hungarin at 72 @ 78. *Lead* has been active enough here, and a large lot of Bleiberg was bought by the government, but at a very low figure. Prices on the whole have only been sustained with difficulty. German Lead has been selling at 21 @ 21.50 florins and Austrian at 20 @ 20.50 the 100 kilos.; the latter the product of private mines, while government Lead sold at 19 @ 20. Private mines have nearly ceased producing altogether. *Spelter.*—The official reports from Breslau mention no sales; yet it is a well-known fact that large dealings have taken place at a decline. There has also developed some activity here, there being an active demand from lamp manufacturers, who use Silesian of the best brands almost exclusively. The rolling mills have also bought a couple of months' supply ahead, part foreign and part Austrian Spelter. We quote prime Silesian 21.25 @ 22 florins the 100 kilos; Medium brands, 21, and Austrian 20.50. Breslau quotes 16.25 @ 16.75 marks the 100 kilos. *Tin* is rising. We quote Banca 80 @ 84 florins; Billiton, 79 @ 82; Australian, 78 @ 80, and Saxonian 80 @ 84 the 100 kilos. *Antimony* has been in steady request, although transactions have not been large. We quote prime Hungarian 62 @ 64 florins the 100 kilos. *Nickel.*—Manufacturers have been freely buying prime quality, but there has been no improvement in value. We quote 9.75 cube Nickel 4.80 @ 5 florins the kilo. *Quicksilver.*—Although tolerably lively, prices have been weak at £19. 7/ the 100 kilos.

SPAIN.

(Cronica de la Industria.)

MADRID, Oct. 30, 1878.—*Lead.*—The following is a detailed statement as to the Lead mines now being worked in the province of Almeria, as well as of those in which operations have been suspended for the time being: In the famous Oador mountain region the Memorias and Ristori mines are still being worked, owing to the extreme abundance and richness of ores and economical reduction. In the Palados de Dalias region hardly a mine is active. The Calabrial mines have stopped work and if the San Miguel and Martires mines are holding out, this is due to the extreme richness in silver of their ores. In the Fondon district none but the Amigos and Sebastopol mines are continuing in operation, this region being a privileged one in point of silver in the lead. The following mountain districts are deserted on account of ruinous Lead prices: Almahilla, Montenegro and Cabrera, and Bedar produces very little. In other portions of the province there have come to a standstill the Campita, Monterilla and Hercal districts. The Cabo de Gata district, usually so lively, is reduced to light mining of manganese and calamine. In the Sierra Almagrera and Herreria regions work is going on, but the struggle is a hard one in view of the low price of lead and silver, and the difficulty experienced in keeping the mines free from flooding, compelling managers to abstain from deep mining. Very little is doing in the Santa Barbara, Por li Pega and Pigius Miguis mines.

CHINA.

(Arnhold, Karberg & Co.)

CANTON, Oct. 9, 1878.—*Coal.*—Our Coal market has undergone but little change with regard to prices; the general tendency of the article, however, has slightly improved, and if but moderate supplies continue to come in we hope that a decided turn to the better may soon take place, though it must be borne in mind that very large stocks are still here, both in the hands of consumers and speculators. Settlements since our last advices have been made as between $6.25 @ $7 ₱ ton. The Premier cargo sold at $8, deliverable at Swatow, which is equal to about $6.50 at Hong Kong.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

LONDON, ENG., Nov. 11, 1878.

THE COMMERCIAL SITUATION

is unrelieved, speaking in a general sense, but is more particularly unsatisfactory in the Nothern and Scottish districts and in Lancashire. From Scotland we hear of additional failures every day, and the current reports from Lancashire and other iron making centers are very grave. The cotton industry is more ruinously depressed than at any previous period of its history, hardly excepting the memorable famine epoch which was brought about during the American civil war. There is no disguising the fact or its grave import. The bubble has burst in Scotland; that in Lancashire will presently explode. The whole of the cotton manufacturing locality is vastly over-built and overstocked. Between 1872 and 1875 mills were run up in all sorts of ways and in all kinds of places, without the slightest regard to prudence or estimates based on ordinary calculations, and by persons in many instances utterly unfit to manage and carry on that class of manufacturing. Many of these original speculators cleared out in hot haste so soon as they perceived the first tokens of slackening trade, and sold their undertakings to "Limited" companies, whose shareholders were and are hosts of small investors and a large section of saving workingmen. While business was even fairly good matters were kept afloat, but now that competition has doubled and trebled more capital is required—a requisition with which few of the shareholders are willing or able to comply. Some have already stopped, others must inevitably do so, and there is every reason for inferring that one big smash would bring scores of minor ones in its train. Already the newspapers speak of

A HARD WINTER,

and give abundant news from the provinces in support of their supposition that during the forthcoming severe weather there will be a most serious amount of deprivation and distress among the operative classes. From every ironmaking district we hear of hundreds, even thousands, of unoccupied dwellings, and the idle manufactories, furnaces and workshops, which are the outward and visible signs of the universal scantiness of work. The seasonable indications, too, all go to show that we may expect a more than ordinarily keen winter—indeed we have already experienced sharp frosts, and on the west coast a heavy fall of snow. Stirred by these untoward symptoms thus early in the penultimate month of the year, certain philanthropic and benevolent gentlemen are casting about

FOR A REMEDY,

but they find none save that of public charity, to which the British artisan, even in his direst straits, is stubbornly opposed. To his credit we may place this fact, but none the less can we pity his wife and family as they shiver and starve, hungry and homeless, during the snows and biting frosts of the dark months of the year.

IN LONDON

this state of things is much less pronounced than in the provinces. There is here so vast a diversity of interests that the depression falls more evenly and affords fewer signs of its pressure than in places where the entire population is practically dependent upon the prosperity of one or two particular trades or industries. London—by which I mean the commercial city and the manufacturing eastern suburbs—complains of the minimization of profits and the constant growth of foreign competition, but the machine keeps moving in pretty much the usual groove, and as I have said, such distress as one would suppose must exist rarely comes to the surface.

THE OPTIMISTS

who confidently predicted a great revival of trade some time ago are still in the background, and their predictions yet remain in the category of future contingencies. No doubt their intentions were of the best and their expectations of the liveliest—yet (such is life!) the fact stands untouched that matters not only do not improve, but actually grow worse. This is proven to demonstration by the monthly trade and navigation details of the

BOARD OF TRADE RETURNS

for October, which make a poor comparison with the figures for the same month of last year, although as regards iron and steel they show larger quantities than the September official tables. The total worth of our foreign trade during the past month amounted to £17,255,459, as compared with £18,372,693 in October, 1877, and £17,779,274 during October, 1876. For the 10 months terminating on October 31, the exports have been of the total value of £162,181,636, as against £166,058,212 during the same period of 1877 and £163,814,721 in 1876. The aggregate value of our imports during October was £29,582,303, as compared with £36,537,002 last October, the respective totals for the 10 months being £313,298,375 and £329,195,405, thus showing that a natural consequence of our decreasing sales is a lessened ability to purchase foreign goods. In detail the returns for last month show that our exports of copper of all kinds increased over 5300 tons, or 7.4 %; iron and steel fell off between 8000 and 9000 tons, or 3.6 %; seed oils, 34,000 gallons, or 2.3 %; hardware and cutlery nearly £1000, or 0.2 %; machinery and millwork increased about £52,000, or 8.2 %; arms and ammunition decreased over 7000 in number; gunpowder lost over 700,000 lb; brass decreased 700 cwts.; yellow metal sheathing fell off about 200 cwts.; tin plates increased 800 tons, owing to the additional United States demand; steel gained over 400 tons; lead lost 800 tons; painters' colors diminished £3000; saddlery gained £10,800; telegraphic wires and apparatus fell off to the extent of £61,000; unwrought tin decreased 600 cwts.; but in zinc and spelter there was the large increase of nearly 8000 cwts. In almost every instance values have fallen, so that even where we have sold larger quantities of the different articles, we have done so for less money than during the comparative period of last year. This is well exemplified, as this October we exported 218,681 tons of iron and steel for £1,698,252, whereas last year in the same month we obtained £1,893,080 for 227,025 tons.

THE LEADING ITEMS

last month as compared with the same period of last year are:

	Quantities. 1877.	Quantities. 1878.	Value. 1877.	Value. 1878
Fire-arms.....No	31,923	24,455	£31,981	£30,672
Brass—manufactures of, not being ordnance, cwt.	7,721	7,019	37,386	30,389
Coal, &c., tons	1,283,208	1,310,831	646,273	611,325
Copper, unwr't, cwt.	23,356	23,786	84,994	79,347
" wrought " .	19,212	24,858	83,830	97,697
Sheathing cwt	71,575	76,873	265,958	262,495
Hardware & cutlery.	....	....	314,846	313,949
Iron, pig, tons	87,579	89,697	244,596	242,529
Bar angle, bolt and rod, tons	19,456	18,271	148,118	130,977
R. R. of all sorts, tons	56,048	42,008	402,096	303,032
Hoops, sheets and boiler and armor plates, includ'g galvanized, tons	20,434	18,110	295,993	230,441
Tin plates, tons	14,579	15,385	267,349	255,179
C't or w't and all other manufs. (except ordnance unenumerated), tons	20,793	22,592	320,718	317,072
Old for reman., tons.	1,260	5,096	5,443	18,252
Steel, unwr't, tons	2,139	2,540	67,620	74,491
Manufactures of steel and iron, tons	1,181	1,296	66,877	73,399
Lead, pig, roll'd sheet piping and tubing, tons	4,563	3,751	95,642	65,856
Steam engines	....	....	188,610	181,732
Other descriptions	....	....	444,713	503,619
Plate and plated and gilt wares	....	....	23,642	21,219
Tin, unwrought, cwt.	11,853	11,279	42,673	34,856
Wire of iron or steel, tons	3,556	3,680	53,907	62,880

Hardware and Cutlery.

	October. Values 1877.	October. Values 1878.	Ten months ending Oct. 31. Values 1877.	Ten months ending Oct. 31. Values 1878.
To				
Russia	£6,753	£12,737	£44,981	£71,270
Germany	22,366	17,130	177,333	150,165
Holland	7,246	7,174	73,578	69,731
France	10,938	11,850	102,284	103,020
Spain & Canaries.	7,948	6,824	94,986	81,033
United States	27,992	23,867	271,892	253,618
Spanish West India Islands	9,516	9,170	103,093	85,617
Brazil	19,440	19,180	194,378	178,401
Argentine Repub.	7,772	7,256	42,305	82,285
British N. America	16,099	14,726	145,866	118,439
British India	28,968	24,935	266,486	211,798
Australia	57,343	59,436	452,910	511,599
Other countries	92,565	99,664	789,905	811,817
Total	314,846	313,949	2,759,997	2,728,793

Railroad of all Sorts.

	1877.	1878.	1877.	1878.
Russia	£45,140	£57,902	£642,374	£463,124
Sweden and Nor.	32,956	11,272	389,135	159,640
Denmark	50	2,599	22,073	29,503
Germany	16,202	39,483	160,844	309,649
Holland	705	103	9,819	1,509
Belgium	35	900	2,696	3,876
France	230	216	1,076	1,397
Spain & Canaries	19,376	23,869	151,474	168,881
Italy	3,028	9,996	70,958	121,392
Turkey	470	24	2,275	2,815
Egypt	....	....	8,708	21,840
United States	....	911	10,844	7,134
Brazil	6,425	5,353	155,612	105,200
Peru	....	2,960	11,611	23,489
Chili	992	2,715	8,460	9,754
British N. America	32,695	19,927	286,887	241,444
British India	146,786	62,376	534,276	612,754
Australia	75,585	47,545	571,163	474,932
Other countries	21,421	14,881	239,654	196,326
Total	402,096	303,032	3,279,939	2,954,659

The special return as to iron and steel rails is:

Iron Rails.

	Month ended Oct. 31. Quantities 1877.	Month ended Oct. 31. Quantities 1878.	Ten months ended Oct. 31. Quantities 1877.	Ten months ended Oct. 31. Quantities 1878.
To				
Russia	551	14	4,238	1,290
Sweden and N'way	2,722	1,044	35,526	12,363
Germany	....	....	76	1,755
Spain	264	502	6,371	7,676
Italy	....	1,278	2,447	8,314
United States	....	....	332	335
Brazil	772	....	17,769	5,963
Chili	....	19	268	727
British N. America.	296	443	6,423	3,794
British India	1,880	149	18,001	19,889
Australia	5,132	2,478	40,333	23,775
Other countries	1,817	1,918	22,629	18,417
Total.....Tons.	13,434	7,845	154,423	104,298

Steel Rails.

	1877.	1878.	1877.	1878.
Russia	4,101	7,385	63,356	49,073
Sweden and Nor.	1,822	408	15,828	9,126
Germany	1,970	4,442	18,089	32,740
Spain	2,202	2,800	11,178	14,710
Italy	43	123	4,580	9,167
United States	....	....	404	501
Brazil	....	145	2,119	6,587
Chili	...	296	521	511
British N. America.	3,555	1,918	26,863	25,891
British India	10,840	3,776	26,784	27,667
Australia	3,773	2,832	20,411	29,437
Other countries	452	515	8,883	13,832
Total....Tons.	28,878	24,640	199,016	219,242
Total of iron and steel rails	42,312	32,485	353,439	323,540

YOUR SHARE

of our manufactures (in chief) may thus be stated:

	October. 1877.	October. 1878.
Hardware and cutlery	£27,902	£23,867
Pig iron.....tons	1,843	3,208
Bars, angles, bolts and rods. "	387	485
Railroad, all sorts "	....	78
Iron hoops, sheets and plates "	519	45
Tin plates "	9,972	11,190
Cast or wrought iron "	212	219
Old iron "	24	309
Steel, unwrought "	609	492
Lead "	102	31
Machines (other than engines)	£15,329	£9,441
Tin, unwrought.....cwt.	2,647	636
Iron and steel rails	nil.	nil.

THE GERMAN TARIFF CONGRESS,

of which the *Ironmonger* gives us a special report, is yet another source of disquietude to our manufacturers, inasmuch as it appears tolerably certain that Prince Bismarck means to revise the matter in a sense in which protectionism seems bound to be put into operation. If and when this is done, it will inflect a serious blow on the pig iron and engineering branches of our iron trade.

THE ELECTRIC LIGHT

pervades our newspapers with exceeding thoroughness, even as it promises shortly to pervade our thoroughfares and premises. I witnessed a trial of the Werdermann system here last week, and can testify to the able manner in which the light of two large burners was divided into ten smaller ones by simply using branch wires, and by using a very large (comparatively) upper, or negative, carbon. M. Werdermann's process has been taken up commercially for Great Britain by M. J. Berger Spence, and I understand that Dr. Hertz has the royalty of it for the United States.

SCOTCH PIG IRON

has again been very quiet, with a recession in prices which will not improbably contiue now that the shipping season is narrowing down, and in the face of the intensified depression in all parts of the country. There are now 200,119 tons in Connall's stores—a greater quantity, I believe, than ever before known, being 35,000 tons more than the stock held 12 months ago. Ballast pig iron is still nominally 43/ ₱ ton alongside. Of the 155 blast furnaces built in Scotland, 88 are in operation, precisely the same number as at the same date last year. Writing from Glasgow on Nov. 9, James Watson & Co. said: "The market during the past week has receded in price, with only a limited business done. On Monday the market was steady at 43/11 and 44/ ₱ ton. On Tuesday it was flat, with business done from 44/ to 43/7½ ₱ ton. On Wednesday the price was unaltered, business being done at 43/7½ and 43/8 ₱ ton, while yesterday the market was listless at 43/7 and 43/6½, cash. Today the tone of the market has been better, a large business being done from 43/6½ to 43/8, cash, closing quietly, sellers 43/7, buyers very near. Shipments last week were 8702 tons, as compared with 8273 tons for the corresponding week of 1877." We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	45/	43/6
Gartsherrie, "	51/	48/
Coltness, "	53/	48/
Summerlee, "	49/	44/
Langloan "	53/6	48/
Carnbroe "	45/3	45/
Calder, at Port Dundas	52/	44/6
Glengarnock, at Ardrossan	48/6	45/6
Eglinton, "	45/6	44/6
Dalmellington, "	45/6	44/6
Shotts, at Leith	53/6	49/6
Kinneil, at Bo'ness	..	52/6

IN CLEVELAND

there is some slight prospect of relief for the local iron and coal trades, owing to a reduction in the railway tariffs within the district, but it is not anticipated that the step will produce any real spurt this year. In the angle mills of the locality large quantities of old iron rails are being piled and rolled down. Into the port of Middlesboro' fairly large lots of Spanish ore are being brought, and to West Hartlepool a number of consignments of Swedish bar iron (for Sheffield) and keg steel. Coastwise the shipments of steel rails from the Eston Works of Bolckow, Vaughan & Co. are steadily upheld. In the North generally

MUCH GRATIFICATION

is expressed at the successful tender of Hopkins, Gilkes & Co. for the 5000 tons of mains and irregular castings required for the water works of Port Elizabeth, South Africa. The price has not transpired, but I suppose it would be about £5 @ £5. 10/ or £5. 15/, f. o. b. Middlesboro'.

THE LONDON CUTLERS COMPANY

are about to hold an exhibition of domestic trade and surgical cutlery, and also of swords and the like. They will award prizes to the successful competitors. If any of your cutlery, &c., houses wish to "have a shy" they should lose no time in placing themselves in communication with W. C. Beaumont, Esq., clerk to the company, 6 Cloak Lane, London, E. C.

FROM SHEFFIELD

my budget is of meager dimensions. Trade is stated to grow worse in the heavy trades, and there is a proportionate increase in the distress among the artisan population. The armor plate mills are not by any means well engaged, owing to the uncertainty that exists as to the relative merits of iron and steel plates. The Bessemer concerns are fairly engaged, but in cast steel there is next to nothing doing. The cutlers and electroplaters are steadily employed here and there, but there is no pressure. On November 1 the metal agents, as the German silver and nickel dealers are locally termed, made a reduction of 3d. ₱ lb in fourth quality German silver and a proportionate drop in other kinds. This brings the price to the lowest point reached for more than 40 years. The prices are as follows: First quality, ingot 1/6, rolled up to 12 inches 1/9; second quality, ingot 1/4, rolled up to 12 inches 1/7; third quality, ingot 1/2, rolled up to 12 inches 1/5; fourth quality, ingot 1/1, rolled up to 12 inches 1/3. The highest point was reached in April, 1873, when prices were as follows: Ingots—first quality, 3/4; second, 2/10; third, 2/4; fourth, 2/. Rolled—first quality, 3/1; second, 3/1; third, 2/7; fourth, 2/5.

STAFFORDSHIRE AND BIRMINGHAM

are dull and stale in respect of iron trade items, everybody in that hapless industry being in a despondent condition and indisposed to believe in the possibility of any early change for the better. Prices are disorganized—indeed the only maxim is "every man for himself and the devil take the hindmost." The old gentleman has already secured a few laggards, no doubt, and may expect a further fairly good aftermath as time goes on. In the hardware sections the state of things is not nearly so bad—indeed, I surmise that on the whole there is an average business being done. Profits, however, are quite problematical.

ENGLISH AND AMERICAN RULES,

levels, &c., are compared in detail by the able Birmingham correspondent of the *Ironmonger* in the Nov. 9th issue of that journal. The writer of the report takes as his respective champions Messrs. Rabone of Birmingham and the Stanley Rule and Level Company. He places the *pros* and *cons.* in juxtaposition and arrives at the conclusion that "for accuracy there is probably not much to choose between them; but in finish, soundness, strength and general excellence of workmanship, as well as cheapness, there can be no question as to the superiority of—say Rabone's rules." What have the Stanley Company to say to this?

SOUTH WALES AND MONMOUTHSHIRE

are both dull as regards iron. The steel works are moderately engaged, chiefly on government contracts. The tin-plate combination still exists, but if we may trust the remarks of a certain eminent firm of Liverpool exporters, some of the manufacturers are already offering to sell at prices which are 9d. to 1/ below the advanced rates fixed at quarter day. Charcoal plates sell but slowly.

THE METAL MARKETS

are quiet all round at rather weaker rates. The *Ironmonger* reports: "*Copper* is quiet, small sales of ordinary Chili brands having been effected at £57. 5/; Burra, at £54. 10/; Wallaroo, £67; English tough, £63. 10/ @ £64. 10/; best selected, £64. 10/ @ £65. 10/; and strong sheets, £69. Charters from Chili for the second half of October are telegraphed as 2600 tons, viz., 1300 tons of bars and ingots, 1050 tons fine in ores and regulus for U. K., and 250 tons bars for the Continent. About 2000 tons foreign ore sold in Swansea and Liverpool at 11/2 per unit, *Tin* has been somewhat easier, with a moderate business in fine foreign at £60 @ £61, spot, and English ingots £65. In the Lusitania, from Sydney, there has been imported 4704 ingots; in the Strathleven, from Singapore, 38 tons, and in the Ajax, from the Straits, 1259 slabs, including 962 slabs in transit. The stock of Billiton tin in Rotterdam and Amsterdam on October 31 was 49,427 slabs, against 34,156 October 31, 1877. The deliveries there since January 1 this year have been 73,785 slabs, against 79,412 slabs last year. *Tin plates* have been rather duller, in spite of the lately increased demand from the United States. Prices are steady, but buyers are holding back in the hope that the restrictive combination may be broken up. From Liverpool a remarkable absence of orders for charcoal plates is reported. *Lead* unchanged and slow of sale at £14. 7/6 @ 15. 5/ for English pig, and £14. 15/ for soft Spanish without silver. *Spelter* is also unaltered at £17 for ordinary brands. *Quicksilver* is £6. 15/ the bottle, with no great demand, and *Antimony* is sluggish at £48 @ £49."

The official report of the London Metal Exchange is: "*Copper*—Steady; G. O. B. Chili bars, £57. 10/, spot; Wallaroo, £67; Burra, £64. 10/ to £65; English tough, £63 to £64; best selected, £64. 10/ to £65. 10/; strong sheets, £69. *Tin.*—The Dutch Trading Company announce for public sale on the 26th inst. about 23,800 tons of Banca. Market higher; business done in fine foreign on the spot, £62 to £62. 10/; and to arrive, £61 to £62; English ingots, £66 to £67. *Iron.*—Scotch pigs, 43/6½ to 43/7. *Lead.*—English pig, £14. 17/6 to £15. 5/; soft Spanish, without silver, £14. 15/. *Spelter.*—£16. 15/ to £17 for ordinary brands. *Zinc.*—No sales. *Quicksilver.*—£6. 15/. *Antimony.*—£48 to £49."

Wood Working Machinery.—First & Pryibil, of 461 to 467 West Fortieth street, send us their new illustrated catalogue of wood working machinery. Instead of a simple illustrated list of machines, the manufacturers have in each instance given a careful description of the machine and its range of work, enabling the reader to gain a clear idea of the machines and their adaptability to any particular service. Among the first and most important machines we find some half-dozen different patterns of band saws. They range in price from $125 to $1200, from those fit only for fine light work to those for re-sawing. Box framing is used in all the different styles and in a large portion of the machinery manufactured by the firm. An improved elastic slide bearing which adjusts itself to the expansion or contraction of the saw greatly to the durability of the saw itself. We note one machine which seems to be of especial value where it is necessary to do occasional "inside" work. It consists of a band and jig saw combined. The jig saw can be removed in a few moments. The manufacturers give the following in regard to this machine: The jig saw blade slides in guides provided both above and below the table, that below being permanent, while that above is adjustable and removable. The upper end of the saw hooks to a guide operating in a suitable slide provided in the arm which is attached to the square bar of the front sawguide. To give proper tension to the jig saw blade, there is attached at the top of the machine, as shown, a radial arm, about which is coiled a spiral spring, and a leather belt connects the radial end of the arm to the slide carrying the upper end of the saw. The advantages of this arrangement are that by means of the top saw guide any length (within certain limits) of jig saw may be used, while the tension can be instantly regulated (to suit the size or kind of jig saw blade used) by altering the position of the arm upon the square band saw guide. This affords a delicacy and facility of adjustment that obviates the liability to breakage to which jig saws, as usually constructed, are especially subject.

Prof. John T. Ordway tells the New England Cotton Manufacturers' Association that much of the oil used for lubricating machinery is dangerous, because when heated to a sufficient degree it throws off an inflammable vapor. In this respect it is claimed that some of the animal and vegetable oils are even more hazardous than those partially mixed with earth oil, and that the higher price of an oil is by no means a guarantee of its safety. An account was given of a fire in the Bates Mills, Lewiston, Me., in which the flames, on reaching the weaving room, shot across it in all directions on a level of about five feet from the floor, and with sufficient heat to melt the lead connections to a gas meter located on the same plane of hight, while a towel hanging two feet below this level was not so much as scorched. This was thought to show that there was a body of inflammable vapor hanging in the air, cast off by the oil used on the machinery.

THE PARIS EXPOSITION.

Great Britain and Her Colonies.—II.

(From our Special Correspondents.)

THE IRON AGE,
B. 3, American Section Exposition Universelle,
PARIS, Nov. 12, 1878.

The Ingram patent rotary machine for printing illustrated papers deserves that we should stop to examine it. We take most of the following description from a specimen sheet of the *Illustrated London News*, printed on this machine at the Exhibition. At one end of the machine is placed a roll of paper about three miles long. When the machine is started the paper is caught by the cylinders immediately above the reel, receiving an imprint of the letter-press form; it is thence carried diagonally downward to the picture cylinders, which print the illustrations on the other side of the sheet; it is next conveyed to the species of guillotine, which cuts each number to its proper size, and being carried therefrom by tapes to the folding machine, this finally delivers a complete copy of the paper—printed on both sides and folded—at the rate of 6500 an hour. One marked advantage claimed for this machine is a great saving of time in making ready the illustrations for printing, from the fact that the cylinders are more rigid and require a thinner "overlay" than other machines. As for the letter-press form, neither "underlaying" nor "overlaying" is required, and the machine is constructed to work without roller-lifts or bearers on either form.

We find several fine working models of various marine engines. Among others three, representing engines constructed by John Wenn & Son, Greenwich, England: 1. A model of the engines of 1350 horse-power as made for H. M. S. Minatour and Northumberland; 2. A model of the engines of the Cristoforo Colombo, 2000 horse-power, three cylinders; 3. A model of the 800 horse-power engine made for H. M. S. Sphinx. This ship is a side-wheeler, and the engine has oscillating cylinders. Maudslay, Sons & Field exhibit a model of a 4-cylinder marine compound engine of 5000 indicated horse-power, as fitted in the White Star steamers Germanic and Britannic. All the above models are on a scale of one-twelfth. Here is a model of the steel paddle steamships Victoria and Brighton, built in 1878 by John Elder & Co., Glasgow, for the London, Brighton and South Coast Railway Company for their service between Newhaven and Dieppe, in connection with the West of France Railway Company. The principal dimensions of these steamships are: Length, 220 feet; breadth, 26 feet 6 inches; depth, 11 feet 8 inches; tonnage, 819 tons; nominal horse-power, 300; speed per hour, 17 knots or 19¼ English miles. We notice four exhibits of locomotives in the British section of the Machine Gallery. These are made by the Fairlie Engine and Rolling Stock Company, London, who have a large freight locomotive with eight wheels, four only being drivers; the London, Brighton and South Coast Railway, a small passenger locomotive with six drivers; Fox, Walker & Co., of Bristol, passenger locomotive with six drivers; and Sharp, Stewart & Co., Limited, Manchester, a locomotive with four driving wheels.

The principal representatives of machine tools are Smith & Coventry, Embleton, Mackenzie & Co., and Sharp, Stewart & Co., the latter's exhibit including planers and a car-wheel lathe. Goodall & Son, London, have an ingenious envelope-folding machine, and we must not omit to mention one of the most curious machines in this section. This is a drill for drilling square holes by rotary motion. This effect is produced by giving the drill a compound motion made up of a rotary motion about its own axis for drilling, and an additional motion to produce the square outline. The angles are of course rounded. Plumbeck & Co. exhibit a West's six-cylinder steam engine. The main body consists of one casting containing six cylinders arranged in a circle and parallel with one another around the shaft, like the chambers of a revolver. The pistons are very long, but being hollow they are very light. They are not connected to any of the other parts of the engine, and are free to turn, so that the wear may be uniform. The pistons, which are single acting, terminate in a phosphor-bronze blunt cone which bears continuously against the periphery of a conical disk, owing to the action of the steam against the opposite side or flat end. Steam is admitted successively to the six cylinders from the steam chest, three pistons being constantly in action at different points of the stroke, thereby imparting a uniform rolling motion to the conical disk, which is supported at its center by a ball and socket joint, and also rolls upon the conical surface of the back plate, which is turned to the same angle, and thus receives the full thrust of the piston and protects the ball and socket joint from any undue strain. The crank is securely fixed in the center of the conical disk, the rolling motion of the disk causing the pin to describe a circle, and by means of the crank imparting a rotary motion to the shaft. The shaft passes through the center of the steam chest and carries an eccentric giving motion to the circular valve.

In the exhibit of railway safety appliances made by Saxby & Farmer, we find an extremely complete and very ingenious system of signals and switches, in which the block and interlocking systems are combined. The exhibit illustrating this invention consists of a machine in which is contained a locking apparatus of 14 levers for working points and signals, and four block telegraph instruments for the exchange of train telegraph signals, with the stations on either side for up and down lines respectively. The handles of the block instruments and the point and signal levers are combined in the same interlocking mechanism, and cannot be manipulated in a contradictory manner. The advantages claimed for this invention, insuring the regular and safe passage of trains along the line, section by section, and preventing "block breaking" are numerous and important, but too lengthy for our columns.

In the exhibit of engines made by John Fowler & Co., we find an 8-horse-power traction engine, a 30-horse-power semi-portable colliery engine, a double cylinder hauling engine and a single cylinder hauling engine. Greenwood & Batley have a collection of shoe machinery, B. & S. Massey exhibit a number of steam hammers of various sizes, and Appleby Brothers, of London, have on exhibition some of their steam cranes, hydraulic warehouse cranes and others. Some of the principal exhibits of pumping machinery are made by the following firms: Hathorn, Davis & Co. show some compound differential and hydraulic pumping engines and mining pumps. Hayward, Tyler & Co. have an important display of steam pumps for all variety of purposes. Tangye Brothers, Birmingham, have horizontal and vertical steam pumps, hydraulic jacks, steam engines and boilers. The well-known pulsometer is represented by a large exhibit made by the Pulsometer Engine Co., Limited. We find also several exhibits of steam fire engines. Brotherhood's three-cylinder engines are exhibited, but as a full description of these appeared in *The Iron Age* not very long ago, it is needless that we should describe them.

H. Holroyd Smith, of Halifax, has a patent furnace in which a mechanical stoker supplies the fuel from below to the bottom of the fire. The object of this is that as the fresh coal approaches the surface the heat above may draw out and burn the gases, thus avoiding smoke and economizing fuel. The fire-bars consist of a series of hexagonal columns supported on a web, and so arranged as to form a honeycomb of air space equal to the metal surface. Messrs. Twibill & Co., of Manchester, exhibit their patent fuel economizers, applicable to heating and filtering water for the various purposes of brewers, dye works, chemical works, distilleries and sugar refineries. The mode of applying the economizer principle for heating air and superheating steam is also shown. The principle of quadruple scrapers invented by Mr. Twibill is applied to his economizers, as well as an invention for filtering the water before it is forced into the boiler. Wigzell & Halsey, London, exhibit their patent two and three cylinder engines for yachts, launches, tugs, fish torpedoes, and agricultural and other purposes. In the former of these engines the steam passes on the end of each cylinder. Inside of these there is a piston, the connecting rod acting directly on the crank, which revolves in a box containing oil for the lubrication of the working parts. The pressure on the connecting rod is always thrusting. The end of the crank is attached to a revolving valve, which, as it revolves, admits steam alternately at each end of the cylinder, and also emits the exhaust through the same. Outside of this inner valve there is a shell attached to a lever which works in an arc, and by means of this lever the steam can be cut off at any part of the stroke.

INDUSTRIAL ITEMS.

NEW HAMPSHIRE.

J. P. S. Otterson & Co., proprietors of the Otterson Foundry, Nashua, have nearly completed an iron tablet frame for the chancel of the new Trinity Church, Boston, that for beauty of design and perfection of workmanship does credit to the taste and skill of the makers. The frame is 7 feet by 4 feet, weighs about 700 pounds and is intended to hold a tablet of the Gardiner family, which was rescued from the old Trinity Church on Summer street at the time of the big fire, and is arranged for a smaller memorial tablet at the bottom. The outside border is composed of a series of twisted columns in reverse order, the joints of the several sections being ornamented with elaborate rosettes, and the corners with full-blown lilies with petals and stamens, all in iron. The upper corners are ornamented with lily buds and the lower ones with a spiral drop draped with leaves. The inside finish and cross bar between the tablets is of elegant design and workmanship. Between the two, a shoulder being left to hold it in place, is to be an elegant gilt bronze molding, to be manufactured by Shreve, Crump & Low, of Boston. Otterson & Co. have been engaged on the work about two months.

MASSACHUSETTS.

H. B. Smith & Co., Westfield, have orders for about 150 tons of direct and indirect radiators, which will give employment to their present force for about two months without making overtime. They report that the prospect for business is good.

Two new 250-horse-power engines, made by Jerome Wheelock, of Worcester, have been received at the Peabody Mills, Newburyport. They will be put up as soon as possible, perhaps in three weeks, and then the mills will start up, giving employment to 250 operatives.

C. A. Foster & Co., Fitchburg, report a seasonable increase in the demand for meat and vegetable choppers. The firm are filling orders at the present time for choppers to go to Amsterdam (Holland), Cincinnati, Saginaw, Mich., and, in fact, all parts of the country. They are making large quantities of their choppers for use in hotels and restaurants. They advise us of the receipt of an order from France for choppers, the first to come from that market.

The successful introduction of the Holly system of heating in this city has increased the interest felt elsewhere in the subject. Manchester, N. H., is now talking of going into it, and a delegation of prominent citizens of that place will visit this city next month, and then go to Lockport, N. Y., to see the system in operation.—*Springfield Republican.*

Eels caused the Robinson Iron Company, of Plymouth, to shut down half a day recently. They got into the water wheel and clogged it up.

Every track in the Wason Car Company's paint shop at Springfield was full at last accounts, and cars were being "set-up" at the rate of eight or nine a day. The painters are working eleven hours per day.

CONNECTICUT.

Steam has been put into the Beardsley Scythe Company's Works at Winsted.

The wheels of three engines built at the Mason Machine Works for the B. & M. R. R. Company six years ago, have been in constant use ever since, and have run during that time, one set 161,419 miles, another 145,482, another 141,000, and all are good for a year or more longer.

The wood shop and brass foundry of the Peck, Stow & Wilcox Company, at Southington, which were burned recently, will be rebuilt immediately.

NEW YORK.

Nelson Lyon, of Albany, has had a very interesting experience in building up a business on the basis of a small but useful device. Some years ago he patented a small iron casting for stiffening the heels of boots and shoes. It was intended to correct the tendency of cheap shoes to "run down" at the heel on one side. The invention would have been of small value in most hands, but by enterprise and perseverance Mr. Lyon has built up an extensive business. During the past two months he has made over five tons per month of these little plates. This month he has considerably increased his production, and is now said to be behind his orders to the extent of $25,000 worth. As the plates weigh only 15 pounds to the gross, the number made will be seen to be enormous.

NEW JERSEY.

The Warren Foundry, Phillipsburg, will close two "pits" in a short time. The main foundry will continue running on orders through the winter.

Messrs. Tippett & Wood, Warren Boiler Works, Phillipsburg, are running their large boiler shops full handed at present. This firm have a good reputation, and it is said the present is the forty-seventh year. Mr. Tippett has been building steam boilers in Wales and America, and no accident has ever happened with a steam boiler of his make. The firm lately shipped a battery of boilers to the Missouri zinc mines, each one of which weighed about 7 tons. At present the firm have orders from several of the furnaces and large manufacturers in New York and Philadelphia.

The Andover Iron Co., Phillipsburg, have laid a narrow gauge railroad from their "iron yard" to the canal, thus enabling the company to ship pig iron by water. The road, though short, required engineering skill of no mean order, because of the necessary combination of grades and curves, and to Wm. St. G. Kent, the assistant superintendent, the credit is due for the success of the enterprise.

The sale of the Camden Iron Works (now in the possession of Jesse W. Starr) by the sheriff has been postponed until the 25th inst.

PENNSYLVANIA.

It is reported, but not officially, that the Crane Iron Co., Catasauqua, have closed a contract tor 10,000 tons of iron at a price in advance of the present market ruling. They have just lighted up No. 2 furnace, making a total of four stacks in blast.

The Thomas Iron Co. have put an additional stack in blast. This company have been selling iron as fast as made, and find another furnace necessary. Between the Lock Ridge and Thomas furnaces, owned by the one company, a telephone wire has been placed. The distance is 12 miles. The company have also completed a laboratory at the Lock Ridge furnace, modeled after the large laboratory at Lafayette College, Easton. Mr. Porter Shimes, of Easton, has been appointed chief chemist.

The Lehigh Iron Co., of Allentown, have now both their stacks in blast.

We clip the following from the Sharon *Herald* of the 22d inst.: At Westerman's, puddle, guide, hoop and sheet mills double turn, bar mill single, plate mill and nail factory on, both spike machines and chain factory going. Blast furnace No. 1 is all ready now for the filling. It is 7 feet in bottom of crucible, 14 feet in diameter of boshes, six tuyeres, closed front and open top. It is probable that the blast will not be put on it until March or April next. No. 2 still doing well, making on a general average good strong No. 1 gray mill. For the month of October the Westerman puddle mill made a total of 1655 tons and 455 pounds, gross weight, 2240 pounds to the ton. The following tables show the weekly yield, also the average daily yield:

1st week	.....	660,555	lbs. or	295	tons and	1,655	lbs.
2d	"	 829,360	"	270	"	460	"
3d	"	 821,253	"	366	"	1,415	"
4th	"	 580,345	"	263	"	225	"
5th	"	 814,500	"	363	"	1,380	"
Making a total of		.....				1,655.3	tons.

The average daily yield for the week foots up as follows:

1st week it shows a daily average of			23.51	tons.
2d	"	"	23.57	"
3d	"	"	23.49⅗	"
4th	"	"	23.05⅗	"
5th	"	"	23.56	"

On Sunday the 16th inst. the Allentown Rolling Mill Company had pay day, $15,000 being disbursed, a larger amount than was paid out on any other day for the past two years.

The production at the furnace of the Warwick Iron Company of Pottstown, week before last, was 386 tons. This is 9⅗ tons more than it ever made in one week before.

Allison's Franklin Iron Works at Port Carbon are filling orders for the Pacific Coast and Australia, and are about to ship a consignment of hoisting, mining and pumping machinery to Lake Superior.

The County Commissioners have reduced the valuation of the Topton Furnace from $100,000 to $60,000, on application of Mr. B. Bryson McCool, attorney for W. F. Huntzinger.

Clarke, Reeves & Co., at Phœnixville, are building one iron bridge 284 feet long in two spans, and one 170 feet long, a single span, for the Central Vermont.

Messrs. Atkins Bros. of Pottsville have all the work they can do, and though prices are low, a most encouraging feature is that they have sold over 3000 tons of iron, mostly rails for export, since Jan. 1, 1878, with orders on hand to bring it up to 4000 tons during the present year.

PITTSBURGH AND VICINITY.

The petition of John R. McCune, trustee, for leave to sell the real estate and personalty of the Escanaba Furnace Company and Cascade Iron Company to Wm. P. Shim, of the Edgar Thomson Steel Company, has been granted by the court, and the trustee ordered to make and execute a deed for the same upon payment of the purchase money, $16,500 cash. The furnace will be removed from Michigan to the property of the company at Braddock's Field and will be blown in first on Bessemer pig and then on spiegel.

At a meeting of fire-brick manufacturers held on Saturday, the 16th inst., at the Chamber of Commerce, it was stated that the Woodland and Clearfield companies had decided to enter the combination formed some weeks ago.

Wm. Miller, of the Duquesne Forge, has just completed the largest steamboat shaft ever forged in Pittsburgh, it being 12 inches in diameter, 40 feet long and weighing about 40,000 pounds.

MARYLAND.

The Kimball Shovel Company, of Baltimore, find a rapidly increasing demand for their specialties, and have recently received orders from China, Australia, South America, and various European countries. The D-handle round and square point shovels are specially adapted for and largely used in Cuba and other sugar-producing countries. The sales of the company during 1878 will be 30 to 40 per cent. in advance of last year.

VIRGINIA.

Longdale Furnace has blown out to repair her inwall.

WEST VIRGINIA.

For the week ending Nov. 16 the Riverside Nail Works, Wheeling, turned out 8193 kegs of nails, which is said to be the largest product ever made in one week in the United States by one factory.

OHIO.

The *Iron Era*, Ironton, says: We note a more cheerful feeling among our pig iron men, and large shipments during the week. There is no advance quotable, although holders are firm at full figures. Bar iron is in good demand, and Lawrence mill is well supplied with choice orders. Nails are active, and we are glad to learn that an advance of 15 cents has been established. Belfont has all she can do to fill orders, and a steady winter's run is probable. I. B. Murdock has been appointed trustee of the Iron and Steel Company, vice L. T. Dean resigned. Belfont furnace will blow in shortly. Monitor has started up again after a rest of two weeks. Norton has blown out and the whole establishment is cold. Col. Wm. Worthington has secured the Kentucky coaling job for Grant Furnace. Clifton Nail Works are still idle, as is the Pomeroy Rolling Mill. The Etna Iron Works Co. are beginning to see daylight, and the prospects of an early release from the hands of the assignee are encouraging. The bonds of the Iron and Steel Co. will be wiped out by the indorsers within a few days. The Etna Co. received an order from Colorado Springs yesterday for 200 tons of iron, to be delivered forthwith at St. Louis.

The Ashtabula Rolling Mill was sold at master commissioner's sale on Monday of last week for $11,200, to E. H. Gilkey, for the bondholders. The purchasers intend to put it in good shape and either sell it or put it in operation again.

The Mingo Iron Works property, at Steubenville, was sold at sheriff's sale on Wednesday of last week, for $67,000. It was bid in by D. McGary, of the Ohio and Pennsylvania Coal Co., for the first mortgage bondholders. The amount of the first mortgage is $67,000, the second mortgage $75,000, and interest, costs and floating debts bring up the total to about $285,000. The property consists of two blast furnaces, one 60x15, the other 60x16, and about 300 acres of coal land.

The Girard Iron Co. are improving their furnace. They are putting up a cast-iron tower 75 feet high, made by Wm. Tod & Co., of Youngstown. In the tower they will put one of Crane Bros.' patent automatic hoists. They are making large quantities of iron. The last week in October they made 435 tons; the first week in November they made 429 tons; the second week in November they made 411 tons. Their average is about 425 tons a week.

Furnace No. 2, at Hubbard, is being rebuilt, and will soon blow in.

The Gaylord Rolling Mill, at Portsmouth, is working on government orders.

The report that the Grant Furnace, at Ironton, which has been out of blast for a number of years, would again go in blast, is confirmed by the fact that workmen are engaged in taking old pipes out of the hot blast and putting in new ones.

Lawrence Furnace, at Ironton, will make the present blast about 2400 tons of metal, all of which has been sold or engaged. Most of the iron has been sold to one party, John H. Bass, Fort Wayne, Ind., one of the largest car-wheel manufacturers in the West.

C. Aultman & Co., Canton, recently shipped a car load of machinery for exhibition at the great Smithfield Show, London, England, which commences Dec. 20. The goods left the port of New York Nov. 14.

The Buckeye Sewer Pipe Co., Akron, have about 50 men employed, who are working full time, and the works are running to their fullest capacity.

The Cleveland Hardware Co. are working 35 men and running 10 hours per day on heavy door hangers and all kinds of wagon hardware. They have just shipped a large invoice of wrought-iron shears to Spain.

The Akron Iron Co. are refusing more orders than would run a mill of their capacity for some months. They are turning out 25 tons of iron per day, running double turn and giving employment to 120 men.

ILLINOIS.

The machinery and car departments of the Chicago and Alton Railroad have been consolidated.

The mills of the Joliet Iron and Steel Company, under the management of Receiver Alex. J. Leith and Superintendent Smith, have been kept steadily running since they resumed work in May last.

The new nail mill at Centralia will begin work about the first of the new year. The firm propose to operate seven puddling furnaces, one scrap furnace and two heating furnaces. They will start 32 machines in their nail factory.

MISSOURI.

The Harrison Wire Company at St. Louis turned out in one day recently 54,820 pounds of No. 4 rod.

The Missouri Car and Foundry Co., whose works at East St. Louis were recently burned, is carrying out its contracts at the old works in St. Louis and the car works at Cambridge City, Ind. A larger force of men is employed at the latter place.

KENTUCKY.

Mount Savage Furnace will make another blast next year.

Bellefonte Furnace continues in successful operation, making at this writing an average of 13 tons No. 1 pig metal.

Charlotte Furnace is now making an average of 13 tons of foundry iron per day.

TENNESSEE.

At the works of the Southern States Coal, Iron and Land Co., South Pittsburg, the work of construction is progressing satisfactorily. Everything is being done to secure the best results in the quality of the pig iron. The ores to be used will produce an excellent strong neutral grade, and it has been decided to select the foundry iron by breaking each pig in half, in order that customers may feel that they can depend upon very careful grading of every shipment. Washed coke exclusively will be used, being a considerable advantage in the purity of the fuel, and the limestone is of the best stone. They have made arrangements with Messrs. E. L. Harper & Co., Cincinnati, to represent them exclusively in the North through the territory lying east of the Mississippi River. It is expected to start stack No. 1 early in February.

Dissolution and Reorganization of an Old Metal Firm.

The old firm of Phelps, Dodge & Co., known the world over, is about to pass out of existence; but a reorganization will be immediately effected under a firm name not yet fully decided upon. The dissolution, which takes place January 1st, 1879, is in accordance with the partnership limitation, and is likewise made necessary, so it is understood, by the recent death in England of Mr. Daniel James, who for fifty years was senior partner of the branch in Liverpool. The firm are proprietors in whole or in part of valuable manufacturing properties and other real estate, including the Ansonia Clock Co., of which they were the founders; the Ansonia Brass and Battery Co.; the stores in Cliff street, this city, and a large wire factory in Ansonia, not to speak of interests less important elsewhere. It is understood that a sale to bring about a partition of interest follows, but as to this little is stated positively, it being natural that the successors to the old firm should desire to repossess themselves of everything so far as they see fit.

The change about to take place marks an epoch in the mercantile annals of the country, the connections of Phelps, Dodge & Co. being widespread. Without referring to the record, it will be remembered that in a certain case coming before a committee of the House of Representatives in Washington, Mr. Dodge, Sr., testified that in the course of a number of years their importations had amounted to some $40,000,000, and that they had paid into the Treasury, in the shape of duties, no less than $8,000,000. It is remarked by the representative of another firm in the trade that of tin alone their importations into the United States cannot have been less than $750,000 per annum in value. Of copper and lead, too, they have been heavy importers, but of late Western lead is purchased lower than it can be imported at a profit, so that a recent arrival from Malaga, Spain, was the occasion of much jocular remark in the metal trade. As regards tin, an observer in the market would probably say their characteristic shrewdness is vindicated by recent considerable importations, just in time to profit by the late rapid advance in prices.

The founder of the house, Anson G. Phelps, a native of Connecticut, sprang from humble life, but from a practical knowledge of his business as a metal worker and by shrewdness as a merchant, rose to a position of wealth and honor. His benefactions were princely. In this last respect it is only fair to say his associates and successors have maintained the reputation for generosity which early made the name illustrious. Mr. Phelps started business in Burling Slip, but not long after, in the year 1816, the business was removed to Front street, a branch house at the same time being formed in Liverpool. Later they removed to Cliff street. In 1830 Wm. E. Dodge, Sr., married a daughter of Mr. Phelps, from which circumstance the house as known in later years became established. Mr. Dodge, prior to that date, was partner in the dry goods commission house of Huntington & Dodge, Pearl street. His father was the late David L. Dodge, dry goods merchant, doing business in Boston and New York. When Mr. Dodge joined the present firm Mr. Peck withdrew, and the firm was then made up of Anson G. Phelps, Sr., Daniel James and Wm. E. Dodge, Sr., the firm title in New York being Phelps, Dodge & Co., and in Liverpool Phelps, James & Co. The firm was further cemented by Mr. Dodge and Mr. James both becoming sons-in-law of the senior partner. Some years later Anson G. Phelps, Jr., was admitted to the firm, and Mr. James Stokes at a date still later.

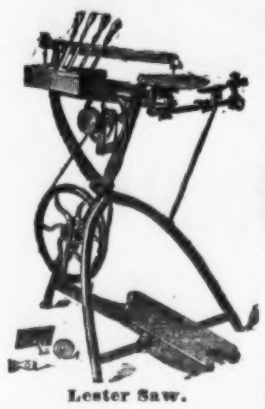
The eldest son of Mr. James, Mr. D. Willis James, and Mr. Wm. E. Dodge, Jr., entered the firm about 25 years ago, and subsequently Anson P. Stokes, Charles C. Dodge and Thomas Stokes came into the membership. Mr. Phelps, Sr., died in 1853 and his son in 1858, both much lamented. With these exceptions, all the members of the firm survived until the death of Mr. James in 1876. Throughout its history, the firm has enjoyed a career of prosperity without serious vicissitudes.

Mr. James Stokes and his son will engage in Wall street after Jan. 1st as private bankers, and Mr. Chas. C. Dodge withdraws to manufacture tin plate, according to report. As to Mr. Dodge, Sr., his course has not been fully resolved upon, but it is hoped he will remain identified with the parent concern, in connection with Wm. E. Dodge, Jr. and Mr. James, who have long been active and influential. While regretting the necessity for change, there is everywhere expressed a desire that all alike may prosper in their new relationships.

Foot Power Bracket Saws

Are now so much in demand that some of them are being sold in almost every town in the United States. Many dealers are doing a profitable Christmas trade on such goods at a time of the year when other business is usually dull. The two Saws shown in these cuts are the ones most in demand. We advertise them as for sale at the hardware stores, and they will be called for. We make a fair discount to the trade.

LESTER SAW.



Lester Saw.

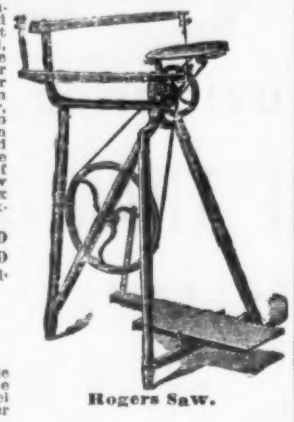
The New LESTER SAW is made of Iron, with all the working parts of Steel, and contains ALL KNOWN IMPROVEMENTS to this date. It is handsomely painted red and green with red stripes, and presents a beautiful appearance. Those parts which are not painted are either Polished or Japanned. We warrant the Saw to be just as herein stated, and we know it will give entire satisfaction, being a more expensive machine than those which we formerly sold for $25. 1st. It consists of a SCROLL SAW, with Tilting Table for inlaid work; arms 18 inches in the clear; clamps which will hold saws of any length or width, and face them in four different directions, cutting lumber from 1-16th to 1 inch in thickness; speed, 1000 strokes per minute. 2d A CIRCULAR SAW 2½ inches in diameter, which will cut lumber ¼ inch and less; with an Iron Table 4 by 5 inches. 3d. A DRILLING ATTACHMENT with six Stubs' Steel Drills of various sizes for wood or iron work. 4th. An EMERY WHEEL, with wide and narrow rim. 5th. A TURNING LATHE, with Iron Ways and Rest, Steel Centres and three Best Steel Turning Tools; length of Ways, 15 inches; distance between Centres, 9 inches; swing, 3 inches; length of Slide Rest, 4½ inches; number of revolutions per minute, 7000. Also, with each Machine, six Saw Blades, a Wrench, Screw Driver, Extra Belt and two sheets of Designs, with a nice box for the small tools and a box for the whole machine. It is taken apart when shipped and packed in a box, but the working parts are all left in place and the frame is put together again by a single bolt.

Price for everything above named, - - - - - $8.00

The same without the Lathe and Circular Saw, - - $6.00

When desired, we furnish with the Lathe a very nice Drill Chuck for working metal and a Tail Stock, with Screw Centre, for $2.00 extra.

ROGERS SAW.



Rogers Saw.

Scroll Sawing and Drilling Attachment. Iron Table, adjustable for Inlaying.

All the working parts of iron and steel; weight, with box, 30 pounds; hight of table above the floor, 32 inches; 12-inch belt wheel; 5-inch balance wheel; arms 18 inches in the clear; latest improved clamps; round belts; extra drills and wrench. The iron and steel parts are polished or Japanned; the wood is painted dark. It is not as good as our Lester Saw, but is much better than any other cheap machine in the market.

Price, including all the attachments and the box, - - $3.00

MILLERS FALLS CO., 74 Chambers St., New York.

Established in 1854.

STEPHENS & CO.,

Manufacturers of **U. S. Standard BOXWOOD and IVORY RULES.**

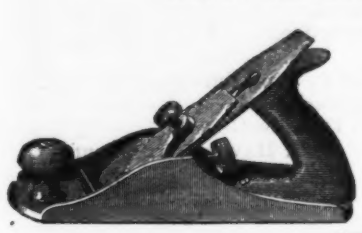
Also Exclusive Manufacturers of L. C. STEPHENS' PATENT COMBINATION RULE.

Rules graduated in foreign measure to order. RIVERTON, CONN.

H. DURRIE & CO., New York Agents, who will supply the trade at factory prices.

BAILEY WRINGING MACHINE CO.,

No. 99 Chambers Street, New York.

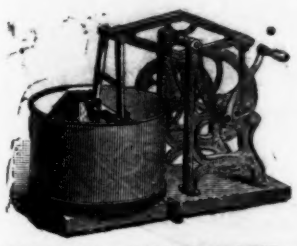


MANUFACTURERS OF

Novelty and Excelsior Clothes Wringers,
Defiance Metallic Planes,
Spoke Shaves, Try Squares, etc.,
Novelty Carpet Sweepers.

MANUFACTURERS' AGENTS FOR

American Meat and Vegetable Choppers,
Silver's Stuffers and Presses,
Simpson's Quick-Adjusting Parallel Vises,
Novelty and Relief Washing Machines,
Domestic Ironing Mangles.



SPECIAL QUOTATIONS ON THE ABOVE GOODS FOR EXPORT.

Send for Illustrated Price List and Discount Sheet.

ESTABLISHED 1850.

WM. HASSALL,

Manufacturer of

American and French

Wire Nails

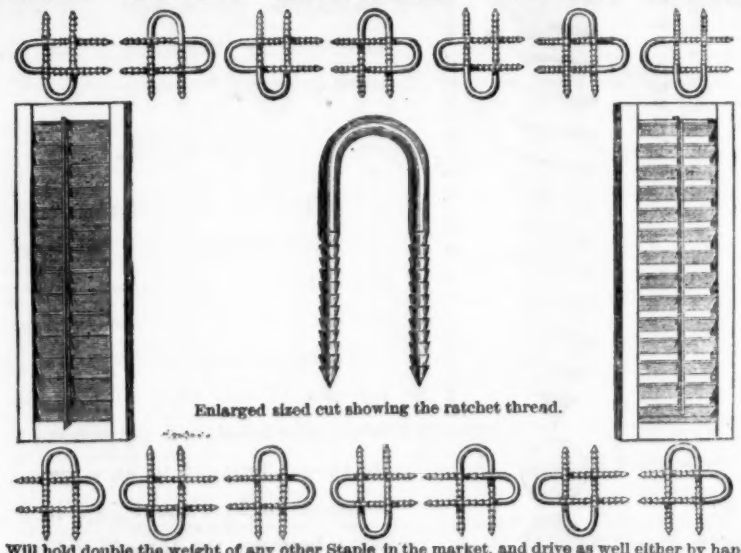
With Flat, Round, Oval, Depressed, Screw Fancy Heads, etc.

Brass Hooks for Jewelers' Cases, Zinc and Iron Hinges, Turn Buttons, Thumb Springs, Book Clasps, and Fancy Metal Work of all kinds.

OFFICE AND WORKS: *Nos. 63 & 65 Elizabeth Street, New York.*

Patent Improved Cone Pointed, Ratchet Thread,

Steel Wire BLIND STAPLES.



Enlarged sized cut showing the ratchet thread.

Will hold double the weight of any other Staple in the market, and drive as well either by hand or machine, and not split the wood.

J. LLOYD HAIGH,

Sole Manufacturer 81 John Street, New York.

NATIONAL Horse Nail Co.

MANUFACTURERS OF

FINISHED

[BRIGHT OR BLUED]

These nails are made of the best brands of **NORWAY IRON,** and are guaranteed to be equal to any in the market.

NATIONAL HORSE NAIL CO.,

VERGENNES, VT.

HORACE DURRIE & CO., Agents,
No. 97 Chambers St., New York

PUTNAM'S HOT FORGED & HAMMER POINTED Horse Shoe Nails.

TRADE MARK.

Made from the best of Norway Iron.

The only *hot forged* machine made Horse Shoe Nail in the world that is *not sheared or cut* on the point. Warranted *never* to *split* or *silver* in the driving, and to hold the shoe *longer* than any other Nail. For sale by the hardware and iron trade generally.

PUTNAM NAIL CO.,

P. O. Address, Neponset, Mass. **BOSTON.**

ANVIL NAIL CO.

We desire to call the attention of the trade to our new manufacture of

Steel Horse Shoe Nails,

made from metal prepared in the Martin-Siemens Furnace by our PATENT process, which produces a nail having all the requisites for a

PERFECT HORSE SHOE NAIL.

The well-known desirable properties of a perfect nail are, that the POINT should be sharp, the SHANK stiff, to drive without crippling under the hammer, SOFT enough to clinch readily, while sufficiently tough to avoid all danger from the "drawing the clinch" or breaking the neck under the head. These properties we claim for the

"ANVIL HORSE NAILS."

In the process of manufacture the metal is compressed under the head, which gives the nail great strength where it is required (between the shoe and hoof), and the cold rolling gives it a stiffness attained in no other way, while the quality of the metal used insures a clinch and point unsurpassed by any nail ever offered in the market.

Samples and prices sent on application.

ANVIL NAIL CO.,

65, 67 and 69 Washington St., New York.

Established in 1839. Formerly L. & A. G. Coes.

L. COES & CO.

Manufacturers of L. Coes'

GENUINE IMPROVED AND MECHANICS

Patent Screw Wrenches

UNDER PATENTS DATED

JUNE 26, 1866,
MARCH 23, 1869,
REISSUED 1870.

NOVEMBER 10, 1863,
FEBRUARY 23, 1864,
REISSUED JUNE 1, 1869,
IMPROVED AUG. 1, 1877.

The back thrust when in use borne by the SHANK instead of the Handle.

None genuine unless stamped "L. COES & CO."

WORCESTER, MASS.

Warehouse, 97 Chambers St., & 81 Reade St., N. Y.

HORACE DURRIE & CO., Sole Agents.

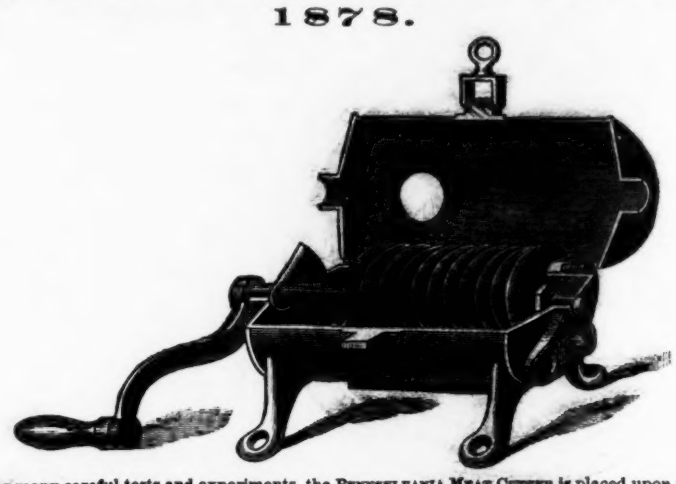
These Axes Made from Firth's Best English Cast Steel.

HORACE DURRIE & CO.

Agents, - - New York.

PENNSYLVANIA MEAT CUTTER.

1878.



After many careful tests and experiments, the PENNSYLVANIA MEAT CUTTER is placed upon the market with the fullest confidence of its superiority. It cuts the meat rapidly and is easily adjusted to cut coarse or fine. The knives are the best quality cast steel, tempered and hardened, easily removed from the shaft for the purpose of grinding, or can be sharpened if necessary by the use of a flat file, without being taken from the shaft. The comb (below the shaft and cutters) is malleable iron. Through this comb the knives pass and the meat entirely cut. At the price these are placed upon the market they can reach the consumer at a price that must guarantee popularity.

PRICE LIST.

No. 1, containing 8 Steel Knives		Per dozen,	$24.00
No. 2,	11	"	28.00
No. 3,	12	"	36.00

Nos. 1 and 2 are packed 1-2 dozen in a box; No. 3 packed 1-4 dozen in box.

Discount to the trade, 50 per cent. Orders solicited.

LLOYD, SUPPLEE & WALTON,

No. 625 Market Street, PHILADELPHIA.

THE "NEW" CROWN

Christmas Tree Holder

is offered to the public as a decided improvement upon last year's style, in the hope of meeting with a largely increased demand during the present season.

The usefulness of this article is obvious to anyone who has tried to arrange blocks, boxes or other appliances for holding Christmas Trees.

This Holder is so constructed that it will firmly clamp and hold any size tree under three inches diameter. The legs are placed in the sockets and fastened by the small thumb screws; the ring nut is turned downward, whereby the clamps are thrown outward. The tree is then set in the holder, and the ring nut turned upwards until the clamps have a sufficiently tight hold. If desirable, the holder can be fastened to the floor, &c., by means of small tacks and screws. Should the tree shrink and become loose in the holder, a slight turn upwards of the ring nut will tighten it again.

Price, $9.00 per dozen.

MANUFACTURED ONLY BY

THE AMERICAN MACHINE COMPANY,

Office and Factory, 1916 to 1934 N. 4th Street, Philadelphia.

AMERICAN SCREW CO.,

Providence, R. I.,

MANUFACTURERS OF MORE THAN 4000 VARIETIES OF PRODUCT,

AND INCREASING THE ASSORTMENT DAILY.

Machinery employed contains important inventions recently patented, and which are designed to produce Screws at a **lower cost to the consumer** than has ever been attained.

All goods are distributed through the Hardware trade, to whom a liberal discount will be allowed.

(*No. 235.*)

INTERNATIONAL EXHIBITION.

PHILADELPHIA, 1876.

The United States Centennial Commission has examined the report of the Judges, and accepted the following reasons, and decreed an award in conformity therewith.

PHILADELPHIA, November 8, 1876.

REPORT ON AWARDS.

Product: **Iron, Brass and Steel Screws, Tire and Stove Bolts, Rivets.**

Name and address of Exhibitor: American Screw Company, Providence, R. I.

The undersigned having examined the product herein described, respectfully recommends the same to the United States Centennial Commission for Award, for the following reasons, viz:

Being of a quality nearly approaching perfection, showing the highest attainment in this branch of manufacture.

G. L. REED. Signature of the Judge.

Approval of Group Judges.

Daniel Steinmetz, G. L. Reed, J. Diffenbach,
Jas. Bain, J. D. Imboden, Dav. McHardy.
Chas. Staples,

A true copy of the record. FRANCIS A. WALKER, Chief of the Bureau of Awards.
Given by authority of the United States Centennial Commission.
A. T. GOSHORN, Director-General.
[L.S.] J. L. CAMPBELL, Secretary. J. R. HAWLEY, President.

After forty years' experience we offer to the trade our Centennial Screws, patented May 30, 1876, as the best we have ever known.

The method of manufacturing is also patented, and we are changing our machinery as fast as possible, to manufacture the improved article only. To introduce them, they will be sold at the same price as the old style screw.

The new screws will be packed in manila colored boxes with the new label covering end of box, and enlarged figures showing plainly contents.

To distinguish this screw we have adopted a trade-mark, which is also secured to us.

The accompanying engravings show the progress of making screw from the old blunt point to style now adopted.

Experience has shown that the weak point of screws, as formerly made, is at the heel of the thread, where all the strains of forcing the screw into the wood naturally concentrate.

Estimated to be FIFTY PER CENT. stronger than a Screw as Commonly made.

To avoid the sharp angle existing in the old style of screws has been the aim of all manufacturers, but every expedient hitherto adopted has proved as objectionable as the evil complained of.

It will be seen in our new screw that not only is the sharp angle avoided, but the strength very much increased, as illustrated. See sections at lines.

CLAIM.

"A Pointed Wood Screw having the outer periphery of the thread upon its body cylindrical, while a portion of the body below the thread and near the neck is conical, the remainder of the body to the point being cylindrical, and yet having all the thread brought to an edge of a constant angle, without jogs in the paths between the threads, substantially as described."

The Iron Age Directory

and Index to Advertisements.

ZUCKER & LEVETT,
NICKEL PLATERS' SUPPLIES.
Estimates for Complete Outfits Furnished.
639 & 641 West 51st Street, New York.

ENTERPRISE Mfg. CO. of PA.
Patented Hardware Manufacturers and Iron Founders,
THIRD and DAUPHIN Sts., PHILADELPHIA.

THE ENTERPRISE (not the Russian) SAD IRON (Clad) Smoothing the Coast.

SPECIALTIES.	SPECIALTIES.
Enterprise Patent Cold Handle Double Pointed SMOOTHING AND POLISHING IRONS, CHAMPION TOBACCO CUTTERS, PATENT MEASURING FAUCETS, SELF-WEIGHING CHEESE KNIVES, &c., &c.	AMERICAN COFFEE, SPICE AND DRUG MILLS SAUSAGE STUFFERS, FRUIT, LARD and JELLY PRESSES, CHAMPION DRIED BEEF SHAVERS. Coffee Roasters, Bung-Hole Borers, &c., &c.

The Stamped Stove Pipe Elbow,
HOGEN'S PATENT.
The Stamped Elbow has neither Crimps, Cavities nor Angles which cause accumulations that rust or corrode the iron.
STAMPED ELBOW CO., formerly HOGEN ELBOW CO.,
OFFICE AND WORKS, Wason St, on Lake Shore, CLEVELAND, O

JESSOP'S
Patent Adjustable Pipe Tongs.

THE BEST IN THE MARKET.

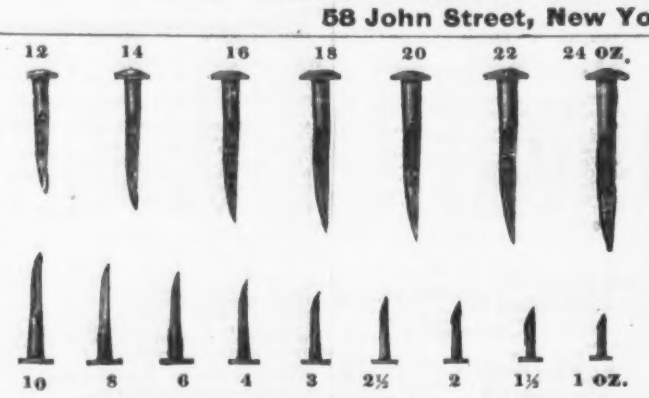
Send for Samples.

EATON, COLE & BURNHAM COMPANY,

Sole Manufacturers,

58 John Street, New York.

TACKS.



NAILS.

SWEDES IRON, UPHOLSTERERS', GIMP AND CUT

TACKS.

Tinned, Leathered and Large Head Iron Carpet Tacks.

TRUNK, CLOUT AND FINISHING NAILS, BRADS, PATENT BRADS, &c.

Lining, Saddle and Tufting Nails, Coffin Tacks and Tufting Buttons.

COPPER, ZINC, STEEL & SWEDES & COMMON IRON SHOE NAILS, &c.

Copper, Iron and Galvanized Boat Nails,

Regular or Chisel Pointed.

Brass & Iron Wire Nails, Moulding Nails & Escutcheon Pins, Chair & Cigar Box Nails, 2d & 3d Fine Nails, Roofing Tacks and Nails, &c., &c.

MADE BY THE

AMERICAN TACK CO., Fairhaven, Mass.

A full line of goods may be found at our

NEW YORK SALESROOM, No. 117 Chambers Street.

McNab & Harlin Mfg. Co.,

MANUFACTURERS OF

BRASS COCKS AND VALVES

For STEAM, WATER and GAS.

Iron Pipe and Fittings, Plain and Galvanized.

PLUMBERS' MATERIALS.

New Illustrated Catalogue and Price List sent by express to the Trade on application.

Factory, Paterson, N. J. 56 John Street N. Y.

REMINGTON'S "REMINGTON'S" NEW LINE REVOLVERS.

Full Nickel Plated,
Checked Rubber Stocks.

$2.50, 22 Cal. $8.00, 38 Cal. $9.00, 41 Cal.
$8.00, 30 Cal. $8.50, 32 Cal. $9.00, 38 Cal. With ejectors.

Best in Market. Discount to dealers only. Cut this out and send for illustrated wholesale catalogue and price lists of *Guns, Rifles, Pistols, Ammunition, &c., &c.* Address

E. REMINGTON & SONS,
P. O. Box 3994. 283 Broadway, NEW YORK.

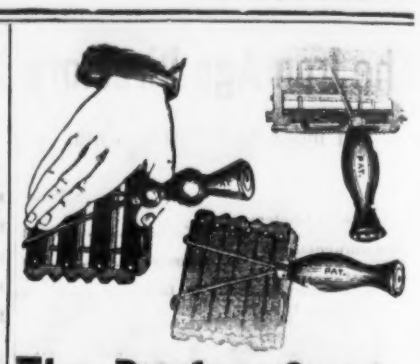
Price, $5·00.
In Morocco Case, $5·50.

MICROMETER CALIPER,

Made by THE VICTOR SEWING MACHINE CO.

Middletown, Conn.

This attractive and very desirable tool will be found more reliable and convenient than the Vernier Caliper, and to Machinists and Tool makers it is indispensable on work requiring very accurate and close measurement. Its capacity is one inch, and is graduated to one thousandths, but can readily be set one-half and quarter thousandths; and is so constructed that any wear resulting from use can be readily adjusted.



The Perfect Comb.

We call your attention specially to our new patent endless wire frame comb. The result of a long series of experiments, made with a view to meeting all the requirements of a *Perfect Comb*. It is better, stronger, and more durable than any ever before invented. The raised wire shank gives what has never before been attained, viz: a rest and brace for the thumb, in such a position that the hand cannot come in contact with the horse while using the comb. The wire braces which run from the shank over the back to the front teeth give strength and durability in a direction never heretofore attained, and at the same time serve as an extra handle; and when clasped by the fingers in connection with the raised shank the comb is more firmly, easily, and completely held, and with much less fatigue to the hand than is possible in any other formation—in short, it needs but a trial to vindicate its name: **The Perfect Comb.**

THE LAWRENCE COMB CO.

Factory and Office,

382 2d Ave., cor. 22d St., N. Y.

WM. S. CARR & CO.

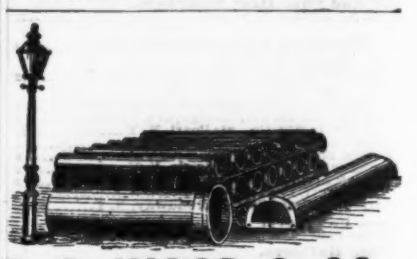
Sole Manufacturers of

CARR'S PATENT Water Closets,

PUMPS, CABINET WOOD WORK, &c.

106, 108 & 110 Centre Street,

Factory, Mott Haven, - - - NEW YORK.



R. D. WOOD & CO.,

Philadelphia,

Manufacturers of

Cast Iron Pipe

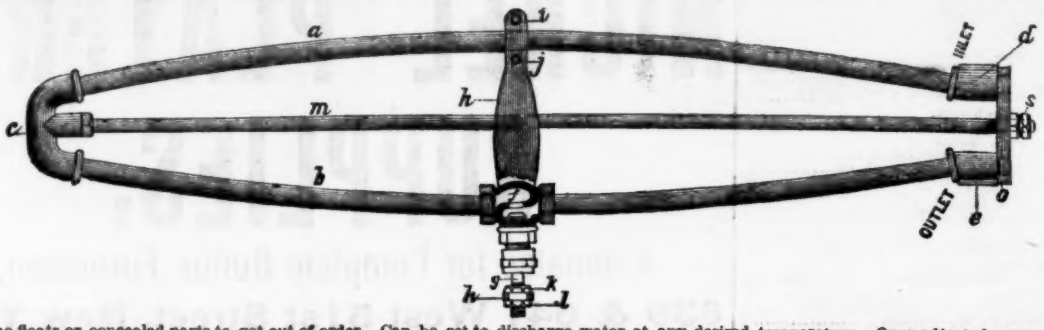
FOR WATER AND GAS.

Lamp Posts, Valves, &c.,

Mathew's Pat. Anti-Freezing Hydrants.

400 CHESTNUT STREET.

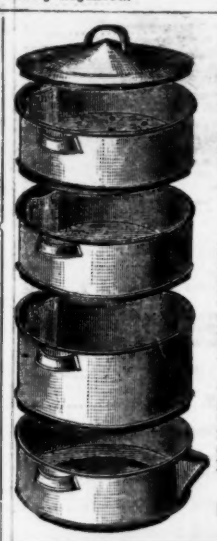
BARR'S ELLIPTIC STEAM TRAP.



Has no floats or concealed parts to get out of order. Can be set to discharge water at any desired temperature. Once adjusted, never needs the slightest attention, being ABSOLUTELY AUTOMATIC in action. Never FREEZES in exposed situations, such as Rolling Mills, Hammer Shops, &c. Simplest in construction of any trap made. Has no reservoir in which to accumulate condensation, but discharges incessantly. Can be set in any position, either side or end up, without altering its working. Occupies less space, and being so light, can be used in situations where no other can.

Send for Circular to manufacturers,

PANCOAST & MAULE, 243 and 245 South Third St., Philadelphia.



DR. HALE'S CHAMPION STEAM COOKER

Every variety of Meats, Vegetables, Puddings, Rice, Hominy, etc., cooked by steam Without Mingling the Flavors.

Used on any STOVE, RANGE or FURNACE. Emits no offensive odor, and cannot possibly burn the food. SAVES TIME, LABOR AND FUEL. Every lady who tries it is enthusiastic in praising it.

RELIABLE AGENTS

wanted in every town in the country. Town, County and State rights may be obtained and agencies secured by applying to

DR. HALE,

No. 51 Washington Street, BOSTON.

ANVIL & VISE COMBINED.

No. 1, 10¼x4 in. face, 4 in. jaw Vise, weight 40 lbs.. $4.50
No. 2, 8x3¼ in. face, 3¼ in. " 35 " 3.75
No. 3, 6x2¾ in. " 3¼ in. " 15 " 3.00

The face of the Anvil is chill hardened. Terms cash. Delivered on cars at Worcester.

RICHARDSON MFG. CO., Worcester, Mass.

Liberal discount to the trade.

CORN SHELLERS

FOR

Home and Export Trade.

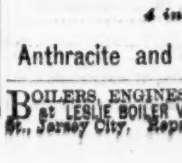
PRICES REDUCED ON ALL STYLES.

Before placing your orders send for illustrated lists with discounts.

H. N. HUBBARD,

MANUFACTORY,

No. 323 East Twenty-Second St., New York.



WM. ESTERBROOK,

Wholesale Manufacturer of

Coal Hods

FIRE SHOVELS, Etc.

311 Cherry St., PHILADELPHIA.

HOLROYD & CO.,

Waterford, N. Y.

HAMMOND'S Window Springs

Support and lock sashes of all kinds and sizes; are very convenient, simple and durable; are easily and quickly operated, and **always sure** to hold sashes in most desirable positions. Lower spring can be used in connection with a sash having weights, as a lock. For sale by most Philadelphia wholesale houses. Circulars give 6 cuts and full instructions.

Samples mailed to the Trade free.

W. S. Hammond,
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York Co., PA.

CLARK'S PATENT EXPANSIVE BITS

Made of JESSOP'S BEST CAST STEEL, and warranted superior to any other

Two sizes: Large Size Boring, ⅝ to 3 inches; Small Size Boring, ⅜ to 1⅝ inches.

Manufactured by

WILLIAM A. CLARK. - - - Westville, Conn.

GEO. M. SCOTT,

Bellows Manufacturer,

Johnson Street,

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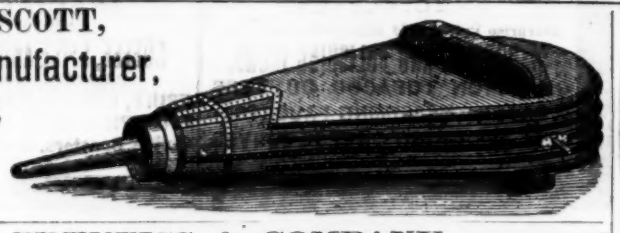


H. PRENTISS & COMPANY,

Sole Manufacturers of

Goddard's Patent-Relieved Machinists', Blacksmiths' and Gasfitters' Taps. Solid Reamers, Screw Plates and Dies.

Headquarters for Billings & Spencer Co.'s manufactures, Twist Drills, Chucks, Machine, Set and Cap Screws, &c.

Dealers in Machinists' Supplies. 14 DEY STREET, New York.

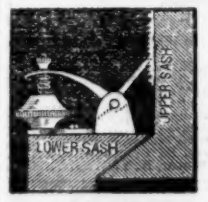
I invite special attention to my

PATENT

Reversible Nozzle.

These Bellows are well adapted and put up for export trade.

I manufacture all sizes, with or without this improvement.



Patented July 10th, 1877.

NONESUCH Self Locking and Burglar Proof **Window Locks.**

Cheapest and best in the market. Send 25c. for sample, price list, &c., to

FRED. J. HOYT

733 Broadway, N. Y.

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70 CHARCOAL.

BUSHELS OF CHARCOAL together with a net profit of

$7 per cord of wood, can be made by using *Jean A. Mathieu Patent Furnace.*

Address JEAN A. MATHIEU, care *Pullan*, 15 S. Seventh Street, Room 9, PHILADELPHIA, PA.

HUGH W. ADAMS,

56 Pine Street, New York City.

Eureka Iron Co.'s Boiler Plate Iron,

Com. Tank to Best Fire Box.

PALO ALTO IRON WORKS,

4, 16, 18, 20 22, 28 & 30 lb. T Rails.

WROUGHT IRON BEAMS,

4 in. to 12 in.

Anthracite and Charcoal Pig Iron.

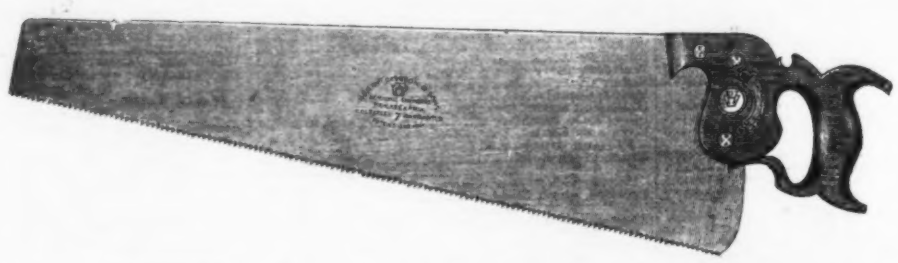
BOILERS, ENGINES AND TANKS FOR SALE at LESLIE BOILER WORKS Pearl, near Greene St., Jersey City. Repairs promptly attended.

Henry Disston & Sons,

KEYSTONE SAW, TOOL, STEEL AND FILE WORKS,

Front and Laurel Streets, Philadelphia.

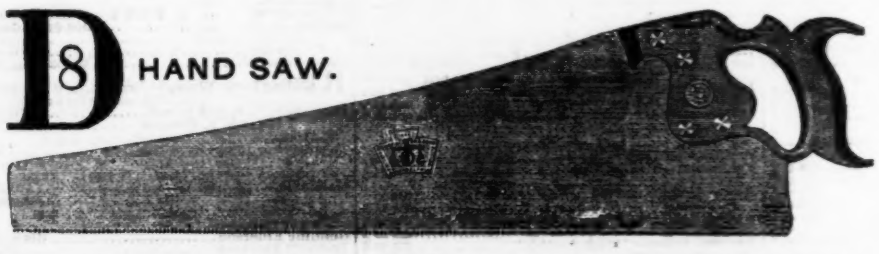
Branch Works, Tacony, Philadelphia. **Branch House, Randolph & Market Streets, Chicago, Ill.**



NO. 7 DISSTON & SONS' CAST-STEEL WARRANTED, BEECH HANDLE.

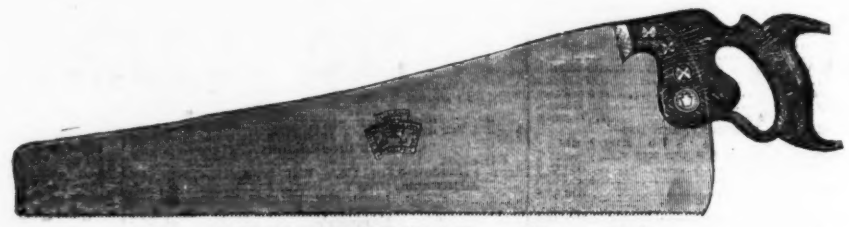
The above cut represents the justly celebrated No. 7 Hand Saw, which was mainly instrumental in securing the wide reputation for Disston's Saws. It is the cheapest Saw upon which we put our own name, and none but the most skilled workmen take part in its manufacture. Our hold upon the trade depends chiefly upon maintaining the high standard of this Saw, which we are determined to do. Every Saw of this brand is fully warranted.

D 8 HAND SAW.



This Saw combines all the valuable improvements in Hand Saws that have been made by us of late. The first and most important improvement is the Hollow or Skew Back, the success of which can best be attested by the numbers sold. The peculiar shape of the butt or heel, coupled with the new method of fastening to the handle, gives a full stroke of the blade without fear of catching or hooking in the work; and as the handle is put further on the blade, you have a full stop at the proper point and a greater command over your saw, by reason of being two inches nearer the point, which must give more power. It is a nice hanging Saw, being light at the point and ground thin on the back.

The Saw being let into the handle on a circle, has a perfect bearing, which, with the new screws, makes it stronger and almost impossible to work loose, and avoids the unsightly gap that is seen on the back of the old-style handle. All the above features are patented.



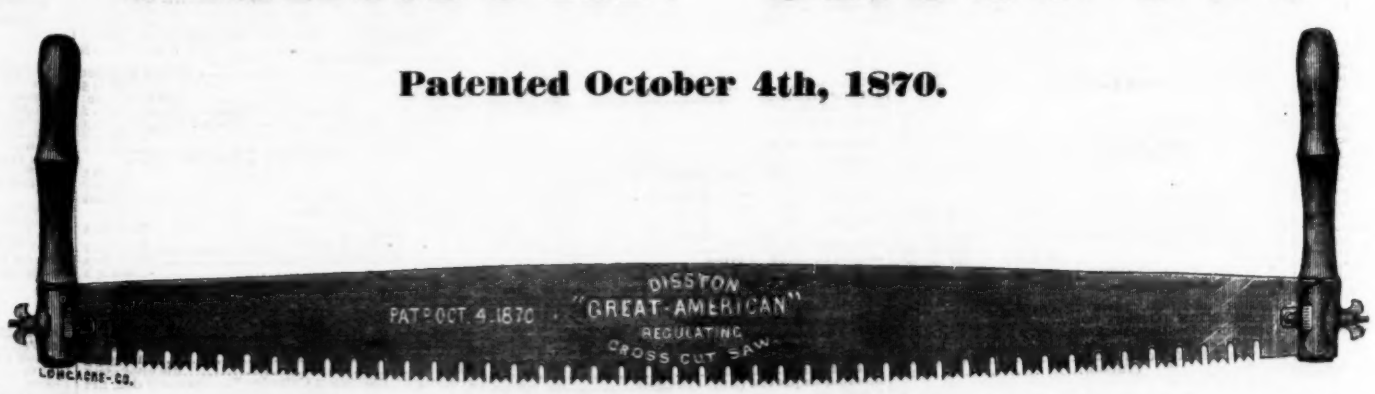
CENTENNIAL, No. 76.

The Centennial, No. 76, is a very popular Saw, same blade as D-8, full polished handle, screws same as D-8, but the handle is not let into the blade. See difference in cut.

We have recently patented THE SKEW-BACK Hand Saw, which combines numerous advantages over the old-Style Saw, being lighter and more easy to handle, stronger in proportion to the amount of metal in the blade, and more free from tremor when in use, than the ordinary Hand Saw of same width. To these Saws are attached our New Patent Handles, which possess many advantages over the old style. They bring the operator closer to his work, and in some of them the blade of the saw is embedded in the handle, imparting strength in case of an accidental blow or fall.

GREAT AMERICAN CROSS-CUT SAW.

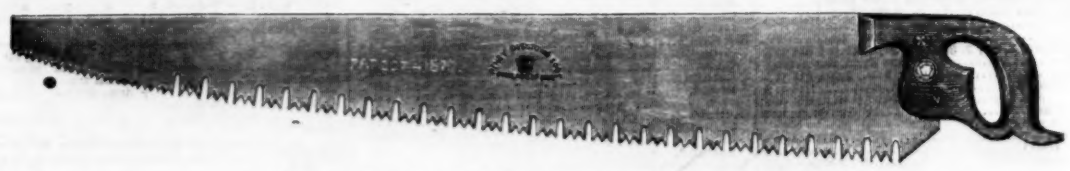
Patented October 4th, 1870.



Particular care is taken in the manufacture of these Saws. They are made of the finest quality of steel, of uniform and high temper, ground gradually tapering from the teeth to the back, and are set and sharpened in the most perfect manner. Each Saw is highly finished and nicely etched, and guaranteed in every respect. The demand for this Saw has been and is constantly increasing, the number sold in the last year reaching over fourteen thousand.

The above cut also represents our Improved Patented Cross-Cut Handles attached to the Saw.

GREAT AMERICAN ONE-MAN CROSS-CUT SAW.



This Saw is manufactured under the same patent, and is as highly finished and fully warranted as the regular Great American Cross-Cut Saw, but is ground on the same principle as our extra quality hand Saws.

We have lately improved the Files for keeping the teeth of the Great American Saws in order. Parties ordering Saws would find it to their benefit to order a few of these files, for it is almost impossible to get the teeth out of order if the Great American File is used.

New York Wholesale Prices, November 27, 1878.

HARDWARE.

Anvils
American...℘ ℔ 11c—dis 20 %
Wright's...℘ ℔ gold 10¼c over 250 ℔s 10¾c, gold
Armitage's Mouse Hole...gold 9¾ @ 10c
Trenton...10¾c currency
Eagle Anvils (American)...℘ ℔ 9c dis 20 %
Apple Parers, &c.
Turn Table...℘ doz $6.75, dis 10 %
Lightning...℘ doz 6.75, dis 10 %
Bay State...℘ doz 13.00, dis 10 %
Reading, '72...℘ doz $6.00, dis 10&2 %
" '74...℘ doz 7.00, dis 10&2 %
" '75...℘ doz 8.00, dis 10&2 %
" '78...℘ doz 8.75, dis 10&2 %
Climax Corer and Slicer...℘ doz 6.75, dis 10 %
Augers and Bits.
Conn. Valley Mfg. Co.; Douglass Mfg. Co.; Ives; Beecher (French, Swift & Co); Griswold; Nobles Mfg. Co.; Kasson's Patent...dis 50 @ 55 %
Cook's, Douglass Mfg. Co...dis 50&5 %
Cook's, Ives'...dis 45&10 %
Snell Mfg. Co.'s C. S. Augers...dis 50&10 %
" " B. Machine...dis 50 %
" " C. S. Bits...dis 40 %
" " Jenning's Bits...dis 35 %
Jennings' Bits...dis 10&10 %
Imitation Jenning's Bits...dis 35 %
Ives' "Jennings" Bits...dis 20&10 %
Lewis' Single Twist Bits...dis 40 %
Andrews Bits...dis 50 %
Griswold's Patent Bits...dis 30 %
Expansive Bits, Clark's, small $18; large, $2...dis 20 %
" " Ives...$20 @ $30—di 33⅓ %
" " Blake's...$20—dis 40 %
" " Parmelee's...$20 and $30...dis 33⅓ %
Hollow Augers Ives'; French Swift & Co...dis 40 %
" " Bonney's Adjust., ℘ doz $48—dis 25&10 %
" " Stearns' Adjust., ℘ doz $48—dis 25&10 %
" " Ives' Expansive...each $4.50—dis 40 %
" " Univ'sal Expansive, each $4.50—dis 20 %
Gimlet Bits...$7.50 ℘ gross, dis 40 %
" Diamond...℘ doz $1.00 dis 33⅓ %
" "Bee"...dis 25&10 %
Double Cut Gimlet Bits Shepardson's...dis 40 %
" " Ct. Valley Mfg. Co...dis 30&10 %
" " Hartwell's...dis 60 %
" " Douglass'...dis 40 %
" " Ives'...dis 50&10 %
Morse's Bit Stock Drill, List of May 15, '78...dis 25 %
L'Hommedieu's Ship Augers...dis 15 %
Watrous Ship Augers...dis 15 %
Awl Hafts.
Sewing, Brass Ferrule...$3.50 ℘ gross—dis 35&10 %
Peg, "...3.50 " dis 35&10 %
Patent Sewing, Short...$1.00 ℘ doz—dis 35&10 %
" " Long...$1.40 ℘ doz—dis 10 %
" Peg, Plain Top...$10.00 ℘ gross—dis 35&10 %
" " Leather Top...12.00 " dis 35&10 %
Awls, Brad Sets, &c.
Awls Sewing, Common...℘ gross $1.35—dis 25 %
" Sewing, Best...℘ gross 1.40—dis 10 %
" Shouldered Peg...℘ gross 2.25—dis 15 %
" Patent Peg...℘ gross .60—dis 15 %
" Shouldered Brad...℘ gross $2.70—dis 25&10 %
" Handled Brad...$8.00 ℘ gross—dis 25&10 %
" Handled Scratch...$7.50 ℘ gross—dis 25&10 %
" Socket Scratch...$1.00@$1.25 ℘ doz—net
Brad Sets, Aiken's...℘ doz $12.00—dis 40&10 %
" No. 42, $10.50; No. 43, $12.50...dis 00 %
" Stanley's Excelsior No. 1, $11.00—dis 25&10 %
Axles.
Common (Guy C. Hotchkiss, Field & Co.)...℘ ℔ 3½c
Solid Collar, Case Hardened, Chilled Box...℘ ℔ 8c
Axle Grease.—Frazer's...℘ ℔ 6c
Balances.
All Spring Balances. List July 25...dis 25&10 %
Bells.
Hand Light Brass...dis. 75 %
" Extra Heavy...dis 40&5&10 %
" White Metal...dis 60&5&10 %
" Silver Chime...dis 20&10 %
" Swiss...dis 25 %
" Globe (Cone's Patent)...dis 25&10 %
Gong, Abbe's...dis 20&10 %
" Yankee...dis 35&10 %
" Barton's...dis 40&2 %
Crank, Taylor's...dis 25&10 %
" Brook's...dis 50 %
" Cone's...dis 10 %
" Connell's...dis 50&10 %
Lever, Sargent's...dis 65&10 %
" Taylor's Bronze or Plated Lever...net
" " Japanned Lever...dis 25&10 %
" Hart, Bliven & Mead Mfg. Co...dis 50&10&2 %
Pull, " "...dis 50&10&2 %
" Brook's...dis 50 %
" Western...dis 25&10 %
Call...dis 20 %
Cow, Common Wrought...dis 20&10 %
" Western...dis 20&10 %
" " Sargent's...dis 60&10 %
" Kentucky "Star"...dis 20&10 %
" " Sargent's...dis 60&10 %
" Dodge's Genuine Kentucky, new list—

Nos.	0	1	1½	2	3	4	5	6	Hog	
	$12.00	10.00	9.00	8.00	6.00	5.00	3.50	2.50	5.00,	dis 50&10 %

" Yaw's Genuine...dis 50 %
" Texas...dis 40&10 %
" Wilson's Moore's)...dis 50 %
Bellows.
Blacksmiths', Common...dis 45 %
" Extra and Pittsburgh Pattern...dis 20 %
Moulders'...dis 25 %
Hand Bellows...dis 20 %
Bit Holders.
Extension, Barber's...℘ doz $15.00—dis 40&5 %
" Ives'...℘ doz $15.00—dis 40 %
Diagonal...℘ doz $24.00—dis 40 %
Angular...℘ doz $24.00—dis 40 %
Blind Adjusters.—Domestic...℘ doz $3.00, dis 20 %
Blind Fasteners.—Mackrell's...dis 30 %
Van Sand's...No. 2000, $14.00, dis 40&7½ %
" old pattern...℘ gross, $10.50, dis 20&10 %
Washburn's Patent...℘ gross $14.00, dis 25 @ 30 %
Merriman's...new list net
Blind Staples.
Boardman's Patent, ⅜ in. and larger ℘ ℔ 23c dis 10&2 %
" 5/16 in...℘ ℔ 30c dis 10&2 %
Blocks.—Burr & Co...dis 25 %
Differential Pulley Blocks...dis 20 %
Penfield Block Works, Rope and Iron Strap'd...dis 40 %
" " " Wrot. Iron Com. bushed...dis 30 %
" " " " all steel roll'r...dis 15 %
" " " Sheaves " " dis 30 %
Bolts.
Cast Iron Barrel, Shutter, &c...dis 65&10 %
Cast Iron Chain (Sargent's list)...dis 65&10 %
Bush's Lever and Chain Bolts...dis 40, 10&10 %
Wrought Iron Barrel...dis 50, 10&10 %
" " Square...dis 50, 10&10 %
" " Shutter (Stanley's list)...dis 50 %
" " " (Sargent's list)...dis 50, 10&10 %
" " Sunk Flush, Sargent's...dis 50&10&10 %
" " " " Stanley's...dis 15&10 %
" " B.K.Flush, Comm'n, Stanley's...dis 30&10 %
" " " " Ex. Heavy, " dis 20&10 %
" " Plated Knob & Slide Flush " dis 10&10 %
Carriage and Tire, Common...dis 75&3 % cash
" " Norway Iron...dis 70 %
" " R. B. & W...(old list) dis 70&5 %
" " Philadelphia...dis 70 %
" " Coleman...dis 60&10 @ 60&20 %
" " Shelton's...(old list) dis 70&5 %
Tire. Am. Screw Co.'s, Phila...dis 70&5 @ 70&10 %
" "Bay State"...dis 75&10 @ 80 %
Star (Phila)...dis 60&10@60&20 %
Union Nut Company...dis 70 %
Stove—American Screw Co.'s...dis 55&5 @ 60 %
" R. B. & W...dis 50&10&5 %
" Union Nut Co...dis 50
Plow...dis 50 %
Machine...dis 70& 5 %
Bolt Ends...dis 60 %
Borax....10@11c ℘ ℔ net

Boring Machines.

		Upright.	Angular.	
First quality, no Augers		$5.50	$7.50	dis 40&10 %
" with Augers		9.00	11.00	dis 40&10 %
Second quality, no Augers		2.35	3.00	net
" with Augers		4.00	4.65	net
Snell's, no Augers	4.75		6.25	dis 40 %
Phillips' with Augers	....		10.00	dis 35 %

Bow Pins.
Union Nut Co...dis 60&10 %
Hotchkiss'...low list dis 10 %
Humason, Beckley & Co.'s...dis 60 %
Sargent & Co.'s...$19.70 and $21.40, dis 60&10 %
Braces.—Barber's Patent...dis 40&5 %
O. S. Backus...dis 50&10 %
Wilson Mfg. Co...dis 10 %
Spofford's Patent...dis 50&5 %
Noble Patent...dis 40&5 %
Ives' "Centennial"...dis 50 %
Common Ball (American)...dis 25&10 %
Brackets.—Shelf (Sargent's)...dis 60&10 @ 60&10&10 %
Swing (T. & S. Mfg. Co.)...dis 33⅓ %
Bright Wire Goods...dis 70&10 %
Bull Rings.—Union Nut Co...dis 50&20 %
Sargent's...dis 66⅔ %
Hotchkiss'...low list dis 10 %
Humason, Beckley & Co.'s...dis 60 %
Union Nut Co...dis 60&10 %
Butts.
Wrought Brass...dis 60 %
Cast Brass, Tiebout's...dis 40 %
" Corbin's...dis 50&10 %
COMMON CAST, NOT DRILLED.
Fast Joint, Narrow...dis 60&10 %
" Broad...dis 65&10 %
Loose Joint, Narrow and Broad...dis 70&10 %
Parliament Butts...dis
Mayer's Hinges...dis
DRILLED AND WIRED.
Fast Joint, Narrow...dis 55&10 %
" Broad...dis 60&10 %
" Broad, Japanned...dis
Loose Joint; Japanned; with Acorns...dis 70&10 %
Parliament Butts...dis 62½&10 %
Mayer's Hinges...dis 72½&10 %
Loose Pin no Acorn...dis 75&10 %
" Acorns...dis 70&10 %
" " Japanned...dis 75&10 %
" " " Plated Tips...dis 70&10 %

Union Mfg. Co.'s Fancy Butts—
Figured Enameled Loose Joint...dis 65&10 %
Boston Finish, Plain...dis 80&10 %
" " with Iron Acorns...dis 75&10 %
" " with Silvered Acorns...dis 70&10 %
WROUGHT IRON.
Fast Joint Narrow...dis 40&10 %
" Lt. Narrow...dis 35&10 %
" Broad...dis 40&10 %
Loose Joint, Broad...dis 40&10 %
Table Butts, Back Flaps &c...dis 35&10 %
Inside Blind, Regular...dis 35&10 %
" Light...dis 10&10 %
Loose Pin, Wrt...dis 50&10 %
Spring Hinges:
American Spiral Spring Butt Co., Jap'd...dis 25 %
" " " " Fancy...dis 10 %
Sabin Mfg. Co.'s Double Acting...dis 35 %
Centennial, Japanned...dis 25 %
" Ornamental...dis 20 %
Union Spring Hinge Co.'s...dis 25 %
American Spring Hinge Co.'s...dis 25 %
Union Mfg. Co...dis 25 %
Bommer's...dis 25 %
Blind Butts, Parker...dis 70&10 %
" Palmer...dis 40&5&10 %
" Seymour...dis 65&10&10 %
" Shepard...dis 70&10 %
" Lull & Porter...dis 66⅔&10 %
" Nicholson...dis 45&10 %
" Huffer...dis 40&10 %
" Clark's, Nos. 1, 3, 5, 40 and 45...dis 65&10 %
" Buffalo "Noiseless"...dis 75 %
" Sargent's...dis 70&10&10 %
Butchers' Cleavers.
Humason & Beckley Mfg. Co...dis 20 %
D. R. Barton Tool Co...dis 20 %
Bradley's...dis 25 %
Beatty's...dis 25 %

1	2	3	4	5	6	7	8
$16.50	19.00	21.50	24.00	27.00	30.00	33.50	36.50

Hart Mfg. Co...dis 50&10 %

0	1	2	3	4	5	6
$20.00	26.00	30.50	33.00	37.00	41.50	45.00

Can Openers.
Messenger's Comet...℘ doz $3.00, dis 20 %
American...℘ doz $2.25, dis 65&10 %
Lyman's...℘ doz $3.75, dis 20 %
Poole...℘ doz $3.75, dis 40 %
No. 4, French...℘ doz $2.25, dis 50 %
No. 5, Iron Handle...℘ doz $0.75 net
Eureka...℘ doz $2.50, dis 10 %
Sardine Scissors...℘ doz $7.00, dis 45&10 %
Star...℘ doz $5.00, dis 25 %
Caps—Percussion, ℘ 1000.
Hicks & Goldmark's G. D. & S. R...35c
" " E. B. 1-10 Ground...70c, dis 6 %
" " E. B. 1-10 Turned...65c, dis 5 %
" " D. W. P. 1-10...$1.40, dis 5 %
" " D. W. P. ½...1.35, dis 5 %
" " Colt's 1-10...70c, dis 5 %
Ely's E. B...1-108, 65 @ 68c. gold
" Double Waterproof, 1-48, $1.50; 1-108, $1.58c, gold
Colt's...1-108, 80c gold
Cartridges.—Metallic...dis 60&7 %
Cards.—Horse and Curry...dis 33⅓&10 %
Cotton...dis 25&10 %
Wool...dis 25&10 %
Car Pusher.—"Giant"...$5.25 each, dis 20 %
Carpet Stretchers.
Cast Steel, Polished...℘ doz $5.00, dis 30 %
" Iron, Steel Points...℘ doz $2.00, dis 45&5 %
Casters.
Bed...dis 55 %
Plate and Shallow Socket...dis 55 %
Deep Socket...dis 40 %
Cattle Leaders.
Hotchkiss' Sons'...dis 10&10 %
Humason, Beckley & Co.'s...dis 60 %
Sargent's...dis 60&10&10 %
Union Nut Co...dis 60&10 %
Chain.
Trace, 6½-1-2...by the cask, ℘ pair 45 @ 46c
" 6½-10-3...by the cask, ℘ pair 43 @ 44c
" 7-10-2...by the cask, ℘ pair 49 @ 50c
German Halter Chain...dis 40 @ 40&10 % gold
" Coil...dis 40 @ 40&10 % gold
Galvanized Pump Chain...℘ ℔ 10½c dis 10 %
Jack Chain, Iron...dis 60&10 %
" Brass...dis 55&10 %
Chalk.
White...℘ gross 55c net
Red...℘ gross 75c net
Blue...℘ gross 90c net
White Crayons...℘ gross 13½c net
Chisels.
D. R. Barton Tool Co. (all kinds)...dis 20 %
Socket Framing, Crossman...dis 65&10 %
" " Buck Bros...new list, dis 25 %
" " Hart Mfg. Co...dis 65&5&10&2 %
" " Merrill...dis 65&10 %
" " Witherby Tool Co...dis 65&10 %
" " Douglass'...dis 70 %
" Firmers, Crossman...dis 60&7½&10 %
" " Buck Bros...new list, dis 25%
" " Hart Mfg. Co., extra...dis 65&5&10&2 %
" " Merrill...dis 70 %
" " Witherby Tool Co...dis 70 %
" " Douglass'...dis 70&5 %
" Corner...dis 65@70 %
Tanged Firmers extra...dis 40 %
" " Butcher's...$5.00 @ $5.25 to £ gold
" " Newbould's...5.50 to £ gold
" " Spear & Jackson's...5.00 to £ gold
" " Buck Bros (Shank)...5.00 to £ gold
Clamps.
Iron, Providence Tool Co.'s, Wrt. Iron...dis 25 %
" Adjustable, Gray's...dis 20 %
" " Lambert's...dis 20 %
" " Snow's...dis 40&5 %
" " Hammer's...dis 15 %
" " Stearns'...dis 15&10 %
" Cabinet, Sargent's...dis 60&10&10 %
" Carriage Makers', Sargent's...dis 60&10&10 %
" Cord and Tape (T. & S. Mfg. Co.)...dis 30 %
Clips, Axle.
Norway or Best...dis 60 %
Superior...dis 60&10 %
Cockeyes....1¼ in., 28c.; 1½ inch, 33c.; 1¾ in., 37c, net
Cocks, Brass.
Racking, new list...dis 50 %
Globe, "...dis 50 %
Plain Bibbs, "...dis 50 %
Ale and Beer, new list...dis 50 %
Coffee Mills.
Board and Box...dis 20@25 %
Increase Wilson's...net
Selsor's Pat...$9.50, $10.50, dis 25 %
American (Enterprise Mfg. Co.)...dis 20 %
French Steel...dis 20 %
The Swift (Lane Bros.)...dis 25 %
Combined Dinner Pail and Lantern.
B'r doz $15.00...dis 30 %
Compasses, Dividers, &c.
Compasses...dis 35&10 %
Callipers...dis 45&10 %
Dividers...dis 55 %
Bemis & Call Co.'s Dividers...dis 60 %
Bemis & Call Co.'s Compasses & Callipers...dis 45&5 %
Cook's...dis 15 %
Excelsior...dis 50 %
Miller's Patent...dis 25 %
Coopers' Tools.
Bradley's...dis 15 @ 20 %
D R. Barton Tool Co...dis 20 %
Corkscrews.—Humason & B...dis 33⅓ %
Corn Knives and Cutters.—Bradley's...dis 10 %
Crow Bars.
Cast Steel...℘ ℔ 9c net
Iron, Steel Points...℘ ℔ 5c
Crucibles.—Gautier & Co...℘ No. 5½c
Curling Irons, &c.
⅜, ½, ¾ in., $1.80, 2.00, 2.40...dis 10 %
Curling Tongs...℘ doz $3.65, dis 10 %
Pinching Irons...℘ doz 7.50, dis 20 %
Curry Combs.
Curry Comb Mfg. Co...dis 25&10 %
Fitch's (List of No. 240, $1)...dis 33⅓&10 %
Hotchkiss' & Kellogg's, Iron & Brass, old list...dis 40&7½ %
Hotchkiss' Novelty...dis 20&10 %
Rubber...℘ doz $9.00, dis 20&10 %
Curtain Pins.—Silvered Glass...dis 15 %
White Enamel...dis 15 %
Cutlery.
Meriden Cutlery Co. (Table)...net
Am. Miller Bro.'s Cutlery Co...dis 25 %
Humason & Beckley, Pocket...dis 25 %
Naugatuck Cutlery Co...list net
New York Knife Co. (Pocket)...dis 35&5 % cash
" " (Table)...net
Dog Collars.
Embossed Gilt...dis 20 %
Leather...dis 30 %
Brass...dis 25 %
Door Springs.
Torrey's Rod...℘ doz $2.00, dis 10 %
Gray's "...℘ doz $1.65, net
Johnson's Rod...℘ doz 3.00, net
Gem (Coil)—
No. 1, Large, Japanned...℘ doz $3.50; No. 2, Medium, "...℘ doz 2.50; No. 3, Small, "...℘ doz 2.00 } dis 10 %

Challenge (Coil)—	Nos.	9	7	6	
Japanned	℘ doz	$2.00	2.50	3.50	dis 30 %
Coppered	℘ doz	4.00	4.50	5.00	
Galvanized	℘ doz	3.50	4.00	4.50	
Nickeled	℘ doz	5.50	6.00	7.00	

Premium (Coil)—	Nos.	1	2	3	
Japanned	℘ doz	$7.50	6.25	5.00	dis 30 %
Nickeled	℔ doz	11.00	9.50	8.00	

Star (Coil)—For Cop'd, Nickel-Plated, &c., see list.
No. 4, ("Snoo Fly") Screen door size ℘ doz $1.80; No. 5, Screen Door Size...℘ doz $2.00; No. 6, Medium...℘ doz 2.50; No. 7, Large...℘ doz 3.50 } dis 30 %
Sabin's Lever...No. 1, $1; 2, $1.50; 3, $2; 4, $2.50; dis 30 %
Sabin's Boss...℘ doz $4.20, dis 40&10 %
Philadelphia...5 in., $5.00; 8 in., $7.00, dis 35 %
Barker's Concealed...dis 20 %
Cowell's...No. 1, $18.00; No. 2, $15.00 ℘ doz, dis 50 %
Rubber, complete...℘ doz $1.90, net
Drawing Knives.
Crossman's No. 1...dis 65&10 %
D. R. Barton Tool Co...dis 20 %
Hart Mfg. Co., extra...dis 65&5&10&2 %
Merrill...dis 65&10 %
Nobles Mfg. Co...dis 15 %
Bradley's...dis 35 %
Adjustable Handle...dis 20 %
Witherby Tool Co...dis 65&10 %
Douglass...dis 70 %
Drills and Drill Stocks.
Blacksmiths'...each $2.15 net
" Self-Feeding...each $7.50, dis 10 %

Breast, P. S & W...dis 25 %
" Hotchkiss...dis 20 %
" Wilson's...dis 20 %
" Miller's Falls...each $2.50, dis 25 %
Ratchet, Merrill's...dis 25 %
" Ingersoll's (old list)...dis 35 %
" Whitney's...dis 30 %
" Weston's...dis 20 %
" Moore's Triple Action...dis 20 @ 25 %
Whitney's Hand Drill...dis 20&10 %
Wilson's Drill Stocks...dis 10 %
Automatic Boring Tools...each $2.75, dis 30 %
Drill Chucks.—Morse's Beach Patent...dis 30 %
" Adjust...each $10.00, dis 20 %
Danbury...$8.00, dis 30 %
Egg Beaters.
Dover...℘ doz $5.00, dis 20 %
Family...℘ doz $3.00 net
National...℘ doz $4.50, dis 33⅓ %
Elevator Buckets.
Mill E. Buckets, light, 3½ to 10 in., (Duc's Improved) ℘ 100 $15.00 @ $54.00, net
Mill E. Buckets, heavy, 5 to 10 inches (Duc's improved) ℘ doz $5.60 @ $10.20, net
Storehouse, (Duc's Patent) 12 to 17, $12.00 @ $20.00...net
Emery and Emery Paper.
Genuine Chester—Regular Nos...℘ ℔ 6c
" " Flour and FF...℘ ℔ 5c
" " in 10-lb. cans...2c extra
Washington Mills—Regular Nos...℘ ℔ 8c
" Flour...℘ ℔ 5c
Wellington Mills, Grain...℘ ℔ 10c net
" " Flour...℘ ℔ 8c net
Hampden Emery Grain...5c net
" " Flour...3c net
B. & A. Emery Paper...dis 15 @ 20 %
Enameled and Tinned Ware.
Kettles...dis 45 %
Sauce Pans...dis 35 %
Tinned Sauce Pans...dis 35 %
Escutcheon Pins.
Iron...dis 33⅓ %
Brass...dis 33⅓ %
Escutcheons.
Door Lock...Same discounts as Door Locks
Brass Thread...dis 60&10 %
Wood...dis 25 %
Faucets.
Fenn's...dis 50 %
Fenn's Cork Stops...dis 40 %
Star...dis 55&10 %
Frary's Patent Petroleum...dis 20&10 %
Wood and Metallic...dis 40 %
West's Patent Key...dis 40 %
Metallic Key, Leather Lined...dis 30&10 %
Cork Lined...dis 70&10 %
Enterprise (Self Measuring)...℘ doz, $36.00, dis 20 %
Felloe Plates...℘ ℔ 15c, dis 50 %
Files.
American File Co...$5.00 to £ currency. dis 35 %
Auburn...$5.00 to £ currency. dis 25 %
Arcade...$5.00 to £ currency, dis 35 %
G. & H. Barnett...dis 25 %
Nicholson...(Nicholson List) dis 35 %
Heller & Bros...$5.00 to £ currency, dis 20 %
Madden & Cockayne File Co...$5.00 to £ cur., dis 25 %
Jowitt's...$4.50 to £ gold
J. & Riley Carr...4.50 to £ gold
Stubs'...$7.00 @ 7.50 to £ gold
Butcher's...4.50 to £ gold
Walter Spencer & Co.'s "Diamond"...4.50 to £ gold
Fisher's...4.75 to £ gold
Moss & Gamble...4.50 to £ gold
H. Disston & Sons (new list)...dis 35 %
Limet & Co. (French)...$4.25 to £ gold
Boynton's Cant...dis 40 %
Fluting Machines.
Knox, 4-inch Rolls...$2.10 each net
" 6 " "...$2.50 each net
" 8 " "...4.40 each net
Peerless, 4-inch Rolls...4.00 each net
" 5 " "...4.75 each net
Eagle, 3½-inch Roll...$30.00 ℘ doz, dis 50 %
" 5½ " "...40.00 ℘ doz, dis 50 %
Eureka, No. 1, 7-inch Roll...6.50 each, dis 33⅓ %
" No. 2 5-inch Roll...5.50 each, dis 33⅓ %
Crown, 4½-in. Roll, $4; 6-in., $4.75; 8-in., $7.25 each, dis 50 %
Champion, 4 in., $2.15; 6-in., $2.50; 8-in., $4.00 each, net
Domestic Fluter...1.50 each net
Geneva Hand Fluter...$15.00 ℘ doz, dis 10 %
Shepard Hand Fluter...No. 75 ℘ doz $15, dis 10 %
" " "...No. 104, ℘ doz $12.00 net
Combined Fluter and Sad Iron...℘ doz 15.00, dis 10 %
Buffalo...℘ doz 10.00, dis 10 %
Fluting Scissors...dis 45&10 %
Forges—Keystone Portable Forge Co...dis 20 %
Forks.
Hay, Manure and Spading...new list, dis 15 %
Plated "A 1, Rogers & Bro...dis 40&5 % cash
" Reed & Barton...dis 40&5 %
Fruit and Jelly Presses.
Enterprise Mfg. Co...dis 20 %
Fry Pans.
Burnished, list as follows...dis 60&5 %

No.	0	1	2	3	4	5	6	7	8
℘ doz.	$3.00	$3.75	4.25	4.75	5.25	6.00	7.00	8.00	9.00

Acme Patent, same list as above...dis 40 %
Gauges.
Marking, Stanley's...dis 45&10 %
" Chapin's...dis 50&10 %
" Star...dis 35 %
Wire...dis 10 %
" Smith's Patent...℘ doz $18.00, dis 40 %
Gimlets.
Nail and Spike...dis 45 %
"Bee" Gimlets...℘ gross $12.00, dis 45 %
"Eureka" Gimlets...dis 50 %
"Diamond" Gimlets...dis 20&10 %
Double Cut, Shepardson's...dis 40 %
" " Hartwell's...dis 50 %
" " Ives'...dis 40&10 %
" " Douglass'...dis 40 %
Glue Pots.
Tinned and Enameled...dis 45 %
Family, Howe's "Eureka"...dis 30 %
" L. F. & C.'s "Handy"...dis 40 %
Grindstone Fixtures.
Sargent's Patent...dis 70&10&10 %
Reading Hardware Co...dis 40&10&2 %
" " "Keystone"...dis 45&10&2 %
Hart Mfg. Co., Nos 9 to 11...dis 50&10 %
Hammers.
Maydole's...dis 15 %
Cheney's Steel Face and Claw...dis 10 %
" all Steel...dis 20&10 %
H. Hammonds...dis 20 %
Verree...dis 5 %
Magnetic Tack...dis 25&10 %
Warner & Noble's...dis 10 %
Yerkes & Plumb's...dis 30 %
Kip's (new list, Sept. '78)...dis 33⅓ %
Hand Cuffs and Leg Irons.
Providence Tool Co.'s Hand Cuffs, $15.00 ℘ doz; " Leg Irons, $25 ℘ doz } dis 10 %
Tower's...dis 25 %
Handles.—Door or Thumb Latches—

Nos.	0	1	2	3	4	
Per doz.	$0.80	1.00	1.18	1.38	1.50	dis 65&10 %

Roggin's Latches...33c net
Bronzed Iron Drop Latches...℘ doz $0.85 @ $1.00 net
Jap'd Store Door Handles—Nuts, $1.40; Plate $0.95
no Plate, 75c...net
Barn Door...per doz $5.00, dis 65&10&10 %
Wrought Chest...dis 60&10 %
Surface Chest, Sargent's list...dis 60&10&10 %
Flush Chest...dis 60&10&10 %
Lifting...dis 60&10 %
Saw and Plane...dis 35&10 %
Boynton's X Cut (Loop)...dis 20 %
" " (Centennial)...dis 15 %
Hammer and Hatchet...dis 20 %
Brad Awl...℘ gross $3.75, dis 25&10 %

Hickory Firmer Chisel,	assorted,	℘ gross	$5.25		
" " "	large,	"	6.25		
Apple " "	assorted,	"	6.00		
" " "	large,	"	7.00		
Socket " "	assorted,	"	3.50	dis 20&10 %	
" Framing "	assorted,	"	6.00		
File, assorted, ℘ gross			3.50		
Auger, assorted, ℘ gross			6.00		
" large,			7.00		

Patent Auger, Ives'...dis 25&10 %
" Douglass'...℘ set $1.25, dis 10 %
" Swan's...℘ set $1, dis 20&10 %
Hangers.—Anti-Friction...dis 50&10 %
Barn Door...dis 70&10 @ 75&10 %
Novelty...dis 40 %
Challenge...dis 50 %
Climax (Anti-Friction)...dis 50 %
Sterling Improved (Anti-Friction)...dis 75&10 %
Cheritree...dis 20 %
Harness Snaps.
Henshaw's...List of 1⅛ changed to $14.00, dis 50 %
Judd's..." " " 14.00, dis 50&10 %
Fitch's (Bristol) " 14.00, dis 50%
Hotchkiss'...dis 10 %
Andrews'...dis 50 %
Sargent's...dis 60&10 %
New York Wire...dis 20&20 %
"German"...dis 65&10 %
Hatchets.
Isaiah Blood...dis 30 %

Shingling,	Nos. 1 2 3	℘ doz	$7.25	$8.00	$8.75
Claw,	Nos. 1 2 3	℘ doz	7.75	8.50	9.25
Lathing,	Nos. 1 2 3	℘ doz	7.50	8.00	8.50

Hunt's...dis 25 %

Shingling,	Nos. 1 2 3	℘ doz	$7.25	$8.00	$8.75
Claw,	Nos. 1 2 3	℘ doz	7.75	8.50	9.25
Lathing,	Nos. 1 2 3	℘ doz	7.50	8.25	9.00

Hurd's...dis 40 %

Shingling,	Nos. 1 2 3	℘ doz	$8.00	$8.50	$9.00
Claw,	Nos. 1 2 3	℘ doz	9.00	9.50	10.00
Lathing,	Nos. 1 2 3	℘ doz	8.00	8.50	9.00

Simmon's...dis 35 %

Shingling,	Nos. 0 1 2 3	℘ doz	$7.50	$8.00	$8.50	$9.00
Claw,	Nos. 1 2 3	℘ doz		9.00	9.50	10.00
Lathing,	Nos. 1 2 3	℘ doz		8.00	8.50	9.00
Broad,	Nos. 1 2 3 4	℘ doz	9.00	10.00	12.00	14.00
"	Nos. 5 6 7 8	℘ doz	16.00	18.00	20.00	22.00

Collins'...dis 10 %

Shingling,	Nos. 1 2 3	℘ doz	$6.00	$6.50	$7.00
Claw	Nos. 1 2 3	℘ doz	6.50	7.00	7.50
Lathing,	Nos. 1 2 3	℘ doz	6.00	6.50	7.00

D. R. Barton Tool Co. (Solid Steel)...dis 20 %

Shingling,	Nos. 1 2 3	℘ doz	$11.00	$10.50	$10.00
Lath,	Nos. 1 2 3	℘ doz	10.50	10.00	9.50
Half Hatchets.	Nos. 1 2 3	℘ doz	11.00	10.50	10.00

D. R. Barton Tool Co...dis 35 %

Shingling,	Nos. 1 2 3	℘ doz	$8.50	$8.00	$7.50
Claw,	Nos. 1 2 3	℘ doz	9.50	9.00	8.50
Half,	Nos. 1 2 3	℘ doz	8.50	8.00	7.40
Lath,	Nos. 1 2 3	℘ doz	8.50	8.00	7.50

Hunters'...℘ doz 10.50

M. H. Jones & Co...dis 40 %

Shingling,	Nos. 1 2 3	℘ doz	$8.00	$8.50	$9.00
Half Hatchets,	Nos. 1 2 3	℘ doz	8.00	8.50	9.00
Claw,	Nos. 1 2 3	℘ doz	9.00	9.50	10.00
Lathing,	Nos. 1 2 3	℘ doz	8.00	8.50	9.00
Broad,	Nos. 2 3 4	℘ doz	11.00	14.00	14.50
"	Nos. 5 6 7	℘ doz	16.50	18.00	19.50

Hay Knives.
"Lightning"...℘ doz $20.00 net
Wadsworth's...dis 30 %
Hinges.
Gate, Western...℘ doz $6.25, dis 60&10 %
" N. E...℘ doz $10.13, dis 60&5&10 %
" N. E. Reversible...℘ doz $6.50, dis 60&10 %
Gate, Clark's No. 1...℘ doz $6.00, dis 50 %
" N. Y. State...℘ doz $7.20, dis 60&10 %
" Automatic...℘ doz $12.50 dis 40 %
" Common Sense...dis 20 %
" Seymour's...dis 40&10 %
" Shepard's...No. 25 ℘ doz $6.00, dis 50 %
Rolled Blind Hinges...dis 60&10 %
Rolled Plate...dis 70&10 %
Rolled Raised...dis 70&10 %
Wrought Strap and T, list Dec. 20, '77...dis 60&10 %
Plate Hinges { 6 to 10 in. 5½c ℘ ℔; "Providence" { over 10 in. 4½c ℘ ℔ } ...dis 10 %
Screw Hook and Strap... { 8, 10, 12 in., 11c; 14 to 36 in., 9½c } dis 50&10 %
Heavy Welded Hook... { 8 to 12 in., 11 c; 14 in. & up, 9½c } ...dis 30 %
Screw Hook and Eye... { ⅜ & 1 in., 10c; ¾ in., 12c; ⅝ in., 14c; ½ in., 16c } dis 35 %
Hoes.—Solid Shank, C. S...℘ doz $5.25, dis 15 %
Socket...℘ doz 5.75, dis 15 %
Riveted Shank...℘ doz 3.25 dis 15 %
Grub...dis 30 %
Planters'...dis 30 @ 35 %
Scovill Pattern...dis 25 @ 30 %
Scovill Pattern, Handled...dis 25 %
Hick's Pat. Solid C. S. Planters'...dis 20&10 @ 30 %
" " Scovill Pattern dis 20&5 @ 35 %
Winsted & Lane, Planters...dis 25@30 %
" " Scovill Pattern...dis 20@25 %
Hooks.
Bird Cage, Sargent's list...dis 60&10&10 %
Cotton...dis 50 %
Cotton (Humason & Beckley Mfg. Co.)...dis 25 %
Belt, (new list) ℘ c...dis 30&10 %
Bench—Hotchkiss', $5.00 ℘ doz...dis 10 %
" Weston's, No. 1, $10.00; No. 2, $9.00 ℘ doz dis 25 %
" McGill's, $3.00 ℘ doz...dis 10 %
" Skinner's, $6.25 per doz...dis 20 %
Clothes Line, Hart's list...dis 60&10&5&10 %
" Sargent's list...dis 66⅔&10 %
" Reading list...dis 45&10&2 %
Ceiling.. Harness. { Hart's list...dis 70&10 %; Sargent's list...dis 70&10 %; Reading list...dis 45&10&2 %
Coat and Hat, Hart's list...dis 65&5&10 %
" " Sargent's list...dis 66⅔&10 %
" " Reading...dis 45&5&10&2 %
" " T. & S. Mfg. Co's list...dis 25 %
Tassel (T. & S. Mfg. Co.)...dis 40 %
Wrought Staples and Hooks and Staples, dis 75 @ 75&10 %
" Staples, Stanley's list...dis 40 %
Wire Screw Hooks and Eyes...dis 70&10 %
Grass and Bush...dis 40 %
Whiffletree—Patent...dis 40 %
Hooks and Eyes—Malleable Iron...dis 60&10&10 %
" Brass...dis 60&10&10 %

Horse Nails

		Nos. 5	6	7	8	9	10	
Ausable	℘ ℔	30c	27c	25c	24c	23c	22c	
" Finished, Polished or Blued	"	31c	28c	26c	25c	24c	23c	dis 20 %
Bridgewater Iron Co. Pointed and Polished	Nos. 5	6	7	8	9	10		
		26c	23c	21c	20c	19c	18c	
	Nos. 5	6	7	8	9	10		
Cortland		29c	26c	24c	23c	22c	21c	dis 15
" P't'd & Blued.		31c	28c	26c	25c	24c	23c	@ 25 %
Globe (New list)	Nos. 5	6	7	8	9	10		
		26	23	21	20	19	18c	net
H. P. Pointed and Finished		26	23	21	20	19	18	dis 20 %
North Western Fini'h'd		26	23	21	20	19	18c	net
" " Plain		25	22	20	19	18	17c	net
National. Pointed and Polished, Pat. Fin.			25	23	22	21	20c	net
Putnam Hammer, P't'd		26	23	21	20	19	18c	net
Vulcan P't'd & Blued		26	23	21	20	19	18c	net

Horse Shoes.—Burden...keg $3.62½
R. I. Horse Shoe Co., Perkins' Improved Light, Medium and Heavy...℘ keg 3.62½
Mule Shoes...℘ keg 4.62½
Perkins' Snow...℘ keg 4.12½
Ice Awls, Chisels, &c.
American Ice Chisel...℘ doz $6.00 dis 45 %
National "...℘ doz $6.25, dis 20 %
Novelty Ice Breakers...℘ doz $6.25 dis 20 %
White's Sliding Head Picks...℘ doz $2.50 dis 40 %
Dunlap's Ring Picks...℘ doz $3.00, dis 25 %
Wood Head Picks, Sargent's...℘ doz $1.85, dis 60&10 %
Iron "...℘ doz 1.85, dis 60&10 %
Ice Mallets Pick in Head...℘ doz $1.75 net
" Pick in Handle...℘ doz 3.00 net
Ice Axes, Small Cast or Malleable...℘ doz 1.25 net
Kitchen Ice Tongs...℘ doz 2.25 net
Combination Ice Tools...℘ doz $2.50, dis 30&10 %
Kettles.
Brass, 7 to 13 inches inclusive...℘ ℔ 35c net
Brass, larger than 13 inches...℘ ℔ 40c net
Enameled...dis 45 %
Knives.
Ames' Butcher Knives...dis 20 %
" Shoe...dis 15 %
" Bread...℘ doz $1.50, dis 15 %
Moran's Shoe and Bread Knives...dis 25 %
Hay and Straw—"Wadsworth's"...dis 30 %
Table and Pocket...See Cutlery
Knobs.
Carriage (Jap'd &c. ℘ gross)...dis 60&70 %
Base—Common...dis 30&10 %
" Plush Tip...dis 10 %
" Elastic End, No. 8...dis 70 %
Door, Mineral; " Por. Jap'd; " " Plated; " " Por. } Same discounts as Door Locks.
Furniture, Plain...75c gross inch, dis 10 %
" Wood Screws...dis 20 %
Picture (T. & S. Mfg. Co.)...dis 40 %
" Sargent's...dis 60&10 %
Shutter, Porcelain...dis 60 %
Ladles.
Melting—Hart's...dis 55&10 %
" Sargent's...dis 50&10 %
" Reading...dis 15&10 %
" Monroe's Patent...℘ doz $4.00, dis 20 %
Lanterns.
Tubular...No. 0, $10.00; No. 1, $11.50; With Guards, 50c extra. } net
Hurricane...dis 25 %
Peerless...No 5, ℘ doz $11.75, dis 10&10 %
Brady's Patent...dis 10&10 %
Ætna...dis 10&10 %
Yankee...dis 10&10 %
De Beque...dis 10&10 %
Police...Small, $7.50; Med., $9.00; Large, $12.00, dis 20&10 %
Convex Reflector...$3.60 ℘ doz, dis 10 %
Lemon Squeezers.
Porcelain Lined...℘ doz $4.00 net
Eureka, Tinned...℘ doz $8.00, dis 10 %
Dunlap's Improved...℘ doz $4.00 net
Sammis'...No. 1, $7.50; No. 2, $12.00 ℘ doz., dis 25&10 %
Townsend's Patent...$6.00 ℘ doz., dis 33⅓ %
Lines.—Linen Fish...dis 25 %
Cotton Chalk...dis 50 %
Sil. Lake Chalk...Nos. 0, 1, 2, 3, $6.00, $6.50, $7.00, $7.50...dis 20 %
Mason's Linen...dis 20 %
Wire Clothes. Galvanized...each 30 @ 40c net
Locks and Latches.
Cabinet—Gaylord; " Eagle... } ...dis 25&2 %
" Barnes & Deitz...dis 30 %
" Bridgeport Lock Co...dis 25&2 %
Trunk...dis 25 %
Langstroth & Crane's List Jan. 1, '77.
Round Key...dis 40&10 %
Flat Key...dis 33⅓&10 %
Barnes & Deitz, Flat Key...dis 30 %
Yale Lock Co., Flat Key...dis 40 %
Shepardson's, Flat Key...dis 35 %
American Lock Mfg. Co...dis 33⅓ %
Plate...dis 33⅓&5&2 %
F. Many's "Extension Cylinder"...$10.50 ℘ doz, net
DOOR LOCKS, &C.
Branford...dis 60&10&2 %
Norwalk...dis 50&10&2 %
Norwich...dis 50&10&2 %
Russell & Erwin...dis 70&2 %
Mallory, Wheeler & Co...dis 35&10&2 %
Reading Hardware Co...dis 35&10&2 %
Trenton...dis 40&5&2 %
Continental...dis 33⅓ %
Padlocks—Russell & Erwin; " Mallory, Wheeler & Co...; " Wm. Wilcox & Co... } ...dis 33⅓&5 % and 2 % for cash
" American Lock Mfg. Co...dis 33⅓ %
" Romer's...dis 30 %
" Conestoga...dis 60 %
" J. H. McWilliams...dis 10 %
" Barnes & Dietz...dis 30 %
" Penn Lock Works...dis 30 %
Mallets.—Hickory and Lignumvitæ...dis 10&10 %
Meat Cutters.

	Nos. 1	2	3	4	
Dixon's (P. S. & W.) ℘ doz.	$14.00	17.00	19.00	30.00	—dis 25

	Nos. 1	2	3	
Miles' Challenge ℘ doz.	$22.00	30.00	40.00	—dis 30 %

Perry's	Nos. 1	2	3	4	4 g'rd	5 g'rd	
Each	$3.00	4.00	5.00	11.00	13.00	36.00	—dis 40 %

	Nos. 100	150	
Woodruff's (P. S. & W.) ℘ doz.	$15.00	18.00	—dis 40 %

Hales'	Nos. 11	12	13	
℘ doz.	$33.00	40.00	51.00	—dis 50&2 %

Draw Cut	Nos. 5	2	6	8	10	
Each	$50.00	75.00	80.00	225.00	400.00	—dis 20 %

American...dis 25 %

Nos.	1	2	3	4	B	5
Each	$5.00	7.00	10.00	25.00	50.00	60.00

Molasses Gates.
Stebbins Pattern...dis 62½&10 %
" Genuine...dis 60&10 %
" Tinned Ends...dis 40&10 %
Chase's Hard Metal...dis 30 %
Bush's...dis 20 %
Lincoln's Genuine...dis 62½&10 %
Weed's...dis 15 %

Nails...See Trade Report
Nuts and Washers.
Square Nuts...7c off list
Hexagon Nuts...8c off list
Washers...7c off list
Nut Crackers
Table (Humason & Beckley Mfg. Co.)...dis 33⅓ %
Blake's Pattern...℘ doz $2.35, dis 10 %
Oakum.
Best...℘ ℔ 9½c
U. S. Navy...℘ ℔ 8½c
Navy...℘ ℔ 7c
Oilers.—Zinc and Tin...dis 55 %
Brass and Copper...dis 50 %
Olmsted's...dis 40 %
Broughton's...dis 40 %
Malleable (Hammer's)...℘ doz $5.00, dis 10 %
Prior's Patent or "Paragon"...dis 50&10 %
Ox Balls...dis 60&10 %
Pencils.
Faber's Carpenters'...dis 10 %
" Round Gilt...℘ gross $5.25 net
Dixon's Lead...℘ gross 4.50 net
" Lumber...℘ gross 7.50 net
Picture Nails and Knobs.
Brass Head, Sargent's List...dis 50&10&10 %
" T. & S. Mfg. Co...dis 50 %
Porcelain Head, Sargent's List...dis 50&10&10 %
" " Judd's List...dis 40 %
Porcelain Head, T. & S. Mfg. Co...dis 40 %
Pinking Irons...℘ doz 75c. net
Plaiting Machines.
Magic...℘ doz $10.00, net
Astor Plaiting Machine...each $15.00, dis 20 %
Crown Plaiting Machines...dis 25 %
6in., $6.00. 10in., $10.00, each.
Planes and Plane Irons.
Bench, First Quality...dis 35&10 %
" Second "...dis 50&10 %
Moulding...dis 35&10 %
Bailey's Patent Adjustable, new list Jan. '77, dis 25&10 %
Bailey's "Victor" " " dis 25&10 %
Defiance Adjustable, new list...dis 25&10 %
D. R. Barton Tool Co...dis 20 %
Plane Irons, Butcher's...$5.50 to £ gold
" Buck Bros...$5.00 to £ gold
" Auburn Tool Co.'s...dis 25 %
" Defiance...dis 25&10 %
" D. R. Barton Tool Co...dis 20 %
" Middletown Tool Co...dis 10 %
" Ohio Tool Co...dis 20&10 %
" Spear & Jackson's...$5.00 to £ gold
" Sandusky Tool Co...dis 10&10&10 %
Pliers and Nippers.
Button's Patent...dis 33⅓ %
Hull's Patent Nippers, No. 1, $15; No. 2, $21 ℘ doz, dis 25 %
Humason & Beckley Mfg. Co...dis 33⅓ %
Gas Pliers...dis 30&10 %
Eureka Pliers and Nippers...dis 25 %
Russell's Parallel...dis 25 %
P. S. & W. Cast Steel...dis 35 %
" " End Cutting Nippers...dis 25 %
" " Tinners' Cutting Nippers...dis 20 %
Plumbs and Levels.
Disston's...dis 70 %
Stanley R. & L. Co.'s Pat. Adjustable...dis 60&10 %
" " " Non-Adjustable...dis 60&10 %
Chapin's Patent Adjustable...dis 60&10 %
" Non-Adjustable...dis 65&10 %
Standard Rule Co.'s New Adjustable...dis 60&10 %
" Non-Adjustable...dis 60&10 %
Johnson's Patent Adjustable...dis 60&10 %
Davis' Patent...dis 60&10 %
Pocket Levels...dis 60&10 %
Post Hole and Tree Augers.
Samson Post Hole Digger...per doz $36.00, dis 20 %
Fletcher Post Hole Augers...℘ doz 36.00, dis 20 %
Vaughan's Post Hole—
6 in. $23.60; 7, 8 and 9 in. $25 per doz...dis 20 %
Leed's...$5.00 each, dis 45 %
Eureka...℘ doz $40.00, dis 40 %
Potato Parers, &c.
Bay State...℘ doz $13.00 dis 10 %
Saratoga "Peeler and Slicer...℘ doz 7.75 dis 10 %
Pruning Hooks and Shears.
Disston's Combined Pruning Hook and Saw per doz $18.00, dis 20 %
" Pruning Hook..." 11.50, dis 20 %
Pruning Shears...℘ doz $4.50 @ $5.00 net
Pulleys.
Judd's Axle...℘ doz $0.50, dis 40 %
Hot House and Tackle...dis 66⅔&10 %
Jap'd Screw...dis 66⅔&10 %
Brass Screw...dis 60&10 %
Jap'd Side...dis 66⅔&10 %
" Clothes Line...dis 66⅔&10 %
Hay Fork Solid Eye, $4.50; Swivel, $5.00, dis 10&10&10 %
" " "Anti-Friction,"...$7.50 dis 20 %
" " "F" Common and Pat. Bushed...dis 20 %
" " Tarbox Pat. Iron...dis 30 %
Shade Rack...dis 50 %
Punches.
Belt or Drive...℘ doz $2.00; 2.25; 2.50, dis 40 %
Spring...℘ doz $7.00, dis 40&5 %
" Leach's Patent...dis 15 %
" Bemis'...dis 20&10 %
Solid, Tinners'...℘ doz $1.44, dis 30 %
Rail.
Sliding Door Wrought Brass...℘ ℔ 40c dis 10 %
" " Iron, Painted...℘ foot 9c, dis 55&10 %
Barn Door, ½, ⅝ and ¾ inch...dis 75&10 %
" for N. E. Hanger...dis 70&10 %
Rakes.
Cast Steel...dis 15 %

8	10	12	14	16 teeth.
$5.00	5.75	6.50	7.25	8.00

Malleable...dis 15 %

10	12	14 teeth.
$3.60	4.00	4.40

Razor Straps.
Genuine Emerson...dis 30@33⅓ %
Badger's Emerson...dis 33⅓ %
Badger's (not Emerson)...dis 25 %
Evans...dis 40 %
Imitation Emerson...℘ doz $2.7, dis 40&10 %
Hunt's...dis 40&5 %
Chapman...dis 10 @ 15 %
Torrey's...dis 20 %
Saunder's...dis 10 @ 15 %
Rivets.
Iron and Tinned...dis 50 %
In bulk, new list of Jan. 10, 1878...dis 40 %
Copper Rivets and Burs...dis 25 %

Nos.	7	8	9	10	11	12	13	14	15
℘ ℔	49c	50c	52c	54c	56c	58c	60c	64c	70c

Tinned Iron Belt Rivets and Burs...dis 40 %
Rivet Sets...dis 40 %
Rods.
Stair...dis 50&10 %
" American Patent...dis 40 %
Rollers.
Barn Door, Sargent's list...dis 70&5&10 %
Novelty...dis 10 %
Acme (Anti-Friction)...dis 50 %
Rope. Manufacturers' Net List, September, 1878
Manila...½ inch and larger ℘ ℔ 11¼c
" ...⅜ inch ℘ ℔ 11¾c
" ...¼ and 5-16 inch ℘ ℔ 12¼c
" Tar'd Rope...℘ ℔ 10¾c
" " Lath Yarn...℘ ℔ 12¼c
" Hay Rope...℘ ℔ 11¼c
Sisal...½ inch and larger ℘ ℔ 9¼c
" ...⅜ inch ℘ ℔ 9¾c
" ...¼ and 5-16 inch ℘ ℔ 10¼c
" Hay Rope...℘ ℔ 9¼c
Rules. Boxwood Ivory.
Chapin's; Stanley; Standard; Willis, Thrall & Son; Stephens } Boxwood dis 60, 10@10 %; Ivory dis 55@55&10 %
Sad Irons.
From 4 to 10 lbs...℘ ℔ 2¾@3¼c net
Self-Heating...℘ doz $8.75 net
" Tailors'...℘ doz $17.50 net
Gleason's Shield and Toilet...dis 25 %
Enterprise Patent Cold Handle...dis 33⅓ %
Mrs. Pott's Pat. Cold Handle, "Crown"...dis 33⅓ %
Combined Fluter and Sad Iron...per doz $15.00, dis 15 %
Sand Paper.
Baeder & Adamson's Flint, 00 to 1½...$4.25 ℘ ream
" " " 2, 2½ & 3. 4.75 ℘ ream
" " " Assorted 4.25 ℘ ream
" " Star...3.25 ℘ ream
" " Emery...℘ ream $6.50 @ 11.50 } dis 15@20 %
New England, same list as B. & A. Flint...dis 15@20 %
Gage's...dis 20&5 %
Sash Cord.
Common...℘ ℔ 16 @ 15c net
Patent...℘ ℔ 18c net
Silver Lake, Russia Flax...℘ ℔ 55c net
" White Cotton...℘ ℔ 55c net
" Drab Cotton...℘ ℔ 60c net
Raw Hide...dis 25 %
Steel Ribbon...dis 10 %
Sash Locks.
Clark's, No. 1, $10.00; No. 2, $8.00 per gross...dis 40@45 %
Ferguson's...dis 33⅓ %
Walker's...dis 10 %
Hammond's Window Springs...dis 25 %
Northup Window Springs...$9.00 per gross, dis 10 %
"The Perfect," Plain Jap'd...℘ gross $10.00 net
" Por. Knob Jap'd...℘ gross 14.00 net
" Nickel-Plated...℘ gross 27.00 net
Sash Weights.—Solid Eyes...℘ ℔ 1 @ 1¼c
Sausage Stuffers or Fillers.
Miles...℘ doz $20, dis 30 %
Perry...℘ doz, No. 1, $15; No. 0, $21, dis 40 %
Draw Cut No. 4...each $30.00, dis 20 %
Enterprise Mfg. Co...dis 20 %
Silver's...dis 25 %
Saws.
Disston's Circular...dis 30 %
" Mill...dis 30 %
" Cross Cut...dis 20 %
" Hand, Panel, Rip, &c...dis 20 %
H. W. Peace's Circulars...dis 25 %
" Mill, Gang and Mulay...dis 25 %
" Cross Cut, Wood, Hand, &c...dis 20 %
E. M. Boynton's Lightning, Cross Cuts...dis 50&5 %
" One-Man, all lengths...dis 40&5 %
" Buck Saws (X Bar)...℘ doz $15, dis 40&10 %
" Billet Webs...℘ doz $10, dis 40&5 %
" Pruning...dis 40 %
Wheeler & Clemson Mfg. Co.'s Hand...dis 20 %
" " Cross-Cut...dis 35 %
Livingston's Butcher and Kitchen...dis 20 %
" Framed Wood—

Nos.	101	102	103	104	105	
Per doz.	$10.00	8.00	10.00	7.50	6.25	net

Saw Frames.
White, Vermont...℘ doz $1.35, dis 15 %
Red, Polished and Varnished...℘ doz $2.00, dis 15 %
Saw Rods...$10 list dis, 50&10 %

Saw Sets.
Boynton's Patent ... dis 40 %
Stillman's Genuine ... ₩ doz $4.25 net
" Imitation ... ₩ doz $3.25, dis 25 %
Common Lever ... per doz $2.00, dis 25 %
Leach's ... No. 0, $8.00; No. 1, $15.00, dis 15 %
Nash's ... No. 1, $8.50; No. 2, $5.50, dis 20&10 %
Hammer, Hotchkiss ... $1.50, dis 10 %
" Bemis & Call Co.'s New Pat ... dis 40 %
Bemis & Call Co.'s New Pat. Lever ... dis 20&10 %
Aiken's Genuine ... $13.00, dis 40&10 %
" Imitation ... $7.00, dis 40 %
Hart's Patent Lever ... dis 20 %
Disston's ... dis 20 %

Scales.
Hatch, Counter ... ₩ doz $36, dis 40&2 %
" Tea ... ₩ doz $11.00 dis 50 %
Union Platform ... $6.00, dis 50 %
Turnbull's Market ... dis 20 %
Fairbanks' ... dis 20&5 %
Howe's ... dis 20&5 %
Chatillon's Grocers' ... dis 40 %
" Eureka ... dis 20 %
Family Universal ... dis 25 %
" Favorite ... dis 25 %
" Turnbull's ... dis 25 %
Scale Beams, Chatillon's list ... dis 25 %
" Sargent's list ... dis 60&10 %

Scrapers.
Box, 1 Handle ... ₩ doz $5.00, dis 10 %
" 2 " ... ₩ doz 6.00 dis 10 %
Defiance Box and Ship ... dis 25&10 %
Foot ... dis 60&10 %
Ship (common) ... per doz $3.00 net
" (Providence Tool Co ... dis 10 %

Screw Drivers.
Hart, Bliven & Mead, new list ... dis 45&10&2 %
Douglass Mfg. Co ... dis 35&10 %
Disston's ... dis 50 %
Disston's Patent Excelsior ... dis 60 %
Buck Bros ... dis 25 %
Stanley Rule & Level Co., Black Handles ... dis 35&10 %
" " " Varnished H'le ... dis 45&10 %
Sargent & Co.'s ... dis 60&10 %

Screws.
Flat H'd Iron ... dis 65 %
Round Head Iron ... dis 50 %
Flat Head Brass ... dis 50 %
Round Head Brass ... dis 35 %
Brass and Silver Capped ... dis 40 %
Japanned, list of Plain Screws ... dis 50 %
Lag or Common Coach ... dis 70&5 %
Coach Patent Gimlet Point ... dis 40 @ 45 %
Bed ... dis 10 %
Machine, Flat Head, Iron, Am. Screw Co ... dis 25 %
" Round Head, Iron, " ... dis 20 %
Bench, Iron ... dis 60&10 %
" Wood, Beach ... ₩ doz $3.00, net
" " Hickory ... dis 20&10 %
Hand ... dis 25&10 %
Hand Rail, Sargent's ... dis 60&10 %
" " Humason, Beckley & Co.'s ... dis 40&10 %
Jack Bell Bottom ... dis 20 %
Jack (Wilson's) ... dis 30 %
Sash (T. & S. Mfg. Co.) ... dis 25 %

Shears and Scissors.
Cast Steel ... dis 80 %
" Iron, 'American' ... dis 50 @ 55 %
Seymour's Straight Trimmers ... dis 65 %
" Scissors ... dis 65 %
Pruning ... see Pruning Hooks and Shears.
Barnard's Lamp Trimmers ... ₩ doz $3.75
Tinners' ... dis 20 %
Heinisch Trimmers and Scissors ... dis 60 %
" R. H. S. " " ... dis 65 %

Sheaves.
Sliding Door, M. W. & Co., list ... dis 35&10&2 %
" R. & E. list ... dis 50&2 %
" Patent Roller ... dis 25&2 %
" " " Hatfield's ... dis 50&2 %
" Russell's Anti-Friction ... dis 50&2 %
" Moore's Anti-Friction ... dis 45 %
Sliding Shutter, R. & E. list ... dis 50&2 %
" " Sargent's list ... dis 25&10 %
Moore's Anti-Friction ... dis 45 %
Philadelphia, Hanging ... dis 40&5&2 %

Shovels and Spades.
Ames ... dis 32½ %
" not stamped "Ames" ... dis 37½ %
Kimball Shovel Co ... dis 20 @ 20&5 %
Old Colony ... dis 30 %
Remington's (Lowman's Patent) ... dis 30 %
Dunning's Shovels and Scoops ... dis 30&7½ %
Rowland's "Regular," new list ... dis 60 %
" Patent, new list ... dis 40&5 %
Oxford Patent, new list ... dis 40&5 %

Shovels and Tongs.
Iron and Brass Head, R. & E. list ... dis 50&2 %
" " Hart's ... dis 50&10&2 %
Polished Steel ... new list, dis 50&10&2 %

Slates.
Square Frames, Round Cornered, by case ... dis 70 %
Less than a case ... dis 65&10 %

Spoke Shaves.
Defiance Metallic ... new list, dis 25&10 %
Iron ... dis 40&10 %
Wood ... dis 30 %
Bailey's ... dis 25&10 %

Spoke Trimmers.
Bonney's ... ₩ doz $10.00, dis 40 %
Stearn's ... ₩ doz $10.00, dis 40 %
Ives' ... No. 1, $15.00; No. 2, $12.00 ₩ doz, dis 40&10 %
Douglass' ... ₩ doz $9.00, dis 20&10 %

Spoons.
Tinned Iron ... dis 15&5 %
Basting ... dis 40 %
Britannia ... dis 60 %
Derby Silver Co ... dis 40&5&5 %
L Boardman's Sons, A1 ... dis 40&5&5 %
Rogers & Bro., A 1 ... dis 40&5 % cash
Reed & Barton ... dis 40&5 %
Hall & Elton ... dis 40&5 %
Holmes, Booth & Haydens ... dis 40&5 %
German Silver ... dis 30&5 %
Diamond Steel (L. Boardman's Sons) ... dis 30&5 %
Tin (P. S. & W.), Teas ... $1.50 ₩ gross, net
" " Tables ... $2.50 ₩ gross, net
Tin Cowles Hdw. Co.) ... dis 10 %
" " case lots ... dis 20 %

Stocks and Dies. ... dis 5&10 %
'Lightning' Screw Plate ... dis. 10 %

Stone.
Hindostan Stone ... ₩ ℔ 6c } dis 30&10 %
" Ax Stone ... ₩ ℔ 8c }
" Slips ... ₩ ℔ 10c }
Sand Stone ... ₩ ℔ 6c, dis 30&10 %
Washita Stone ... No 1, ₩ ℔ 20c } dis 10 %
" ... No 2, ₩ ℔ 16¾c }
" Slips ... No. 1, ₩ ℔ 45c }
Arkansas Stone ... No. 1, ₩ ℔ $1.00 }
" ... No. 1, ₩ ℔ $0.85 }
" Slips ... No. 1, ₩ ℔ $2.25 }
Turkey Oil Stone (Boyd & Chase) ... 4 to 8in, $1.00 ₩ ℔, dis 10 %
" Slips ... $2.50 ₩ ℔, dis 10 %
Lake Superior (Boyd & Chase) ... ₩ ℔ 20c, dis 10&5 %
" " Slips " ... ₩ ℔ 45c, dis 10&5 %
Grindstones, Family, Loring's ... dis 10 %

Stove Polish.
Joseph Dixon's ... ₩ gross $6.00, dis 5 %
Gem ... ₩ gross $4.50, dis 5 %
Gold Medal ... ₩ gross $6.00, dis 25 %
"Mirror" ... ₩ gross $6.00, dis 5 %
Ruby ... ₩ gross $3.75, net
Rising Sun ... ₩ gross $5.75, net

Squares.
Steel ... dis 50 %; full cases, dis 50&10 % } 2 % cash
Iron ... dis 50 %; full cases, dis 50&10 % }
Nickel Plated ... add $2.50 @ $4.00 ₩ doz, net }
Try Squares and T Bevels ... dis 45&10 %
Star Try Squares and Bevels ... dis 35 %
Disston's Try Squares and T Bevels ... dis 50 %
Winterbottom's Try and Mitre ... dis 20&10 %
Bailey's Try Squares and T Bevels ... dis 25&10 %

Tacks, Brads, &c.
List of May, 1878 ... dis 55 @ 55&10 %
Shoe Nails, (new list) ... dis 10 %
Double-Pointed Tacks ... dis 40&5 %

Tap Borers.
Common and Ring ... dis 20&10 %
Ives' Tap Borers ... dis 10&10 %
Enterprise Mfg. Co ... dis 20 %

Tapes, Measuring.
American ... dis 25 %
Spring Tapes ... dis 25&10 %

Thermometers.
Tin Case ... dis 60&10&10 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion) ... dis 20 %
Wood Bottom ... ₩ doz $12.00, dis 30&10 %
All Iron ... ₩ doz $10.50, dis 40&5 %
Nashua Lock Co.'s ... ₩ doz $18.00, dis 50 %

Toe Calks.—Winsted ... ₩ ℔ 10c. dis 10 %

Tinners' Tools and Machines.
Machines (P. S. & W.) ... dis 5@10 %
Tools (P. S. & W.) ... dis 15@20 %

Traps.
Game, Newhouse ... dis 33⅓ %
" Newhouse Pattern ... dis 60&10 %
" Blake's Patent ... dis 40&10 %
Mouse, Wood, Choker ... ₩ doz holes, 12 @ 13c
" Patent Choker (Union Nut Co) ... ₩ doz holes, 16 @ 19c, net
" Round Wire ... ₩ doz $1.50, dis 10 %
" Cage " ... ₩ doz $2.50, dis 10 %
" Patent Self Setting ... ₩ doz holes, 25c, net
" Catch-em-alive ... ₩ doz $2.75, dis 10 %
Rat. "Decoy" ... per doz $10.00, dis 10 %

Trowels.
Lothrops Brick and Plastering ... dis 10 %
Reed's Brick and Plastering ... dis 15 %
Disston's Brick and Plastering ... dis 20 %
Peace's Plastering ... dis 20 %
Clement & Maynard's ... dis 20 %
Rose's Brick ... dis 15 %
Brades' Brick ... gold, dis 20 %
Worrall's Brick and Plastering ... dis 20 %
Garden ... dis 50 %

Triers.
Butter and Cheese ... dis 25 %

Vises.
Solid Box, Trenton ... New List, Nov. 19, '78, dis 10 %
" Wilsons ... New List, Nov. 19, '78, dis 10 %
" "Crown" (A. B. Hildicks) 40 to 100 lbs., 15c currency, dis 20 %
" Peter Wrights ... 15½c, gold
Parallel, Parker's ... dis 20 %
" Wilson's ... dis 45 @ 50 %
" Howard's ... dis 25 %
" Merrill's ... dis 20 %
" Sargent's ... dis 60&10 %
" Trenton ... dis 25 %
" Backus and Union ... dis 25 %
" Fisher & Norris ... dis 15&10 %
" Stevens' ... dis 25 %
" Simpson's Adjustable ... dis 25&10 %
"Family," List ... net
Saw Filers, Bonney's ... ₩ doz $24.00, dis 20&10 %
" Stearn's ... dis 20&10 %
" Hopkins' ... ₩ doz $17.50 dis 10 %
Lowell Hand Vises ... dis 20 %
Richardson's Vise and Anvil ... dis 25 %

Ventilators.
Protective (upper) per foot, $1.00 } dis 2 %
" (lower) " 1.50 }

Washer Cutters.
Smith's Patent ... ₩ doz $12.00 dis 10 %
Johnson's ... ₩ doz $12.00. dis 20&10 %
Penny's ... ₩ doz $14.00 and $16.00. dis 35&10 %
Appleton's ... ₩ doz $8.00, dis 10&10 %

Washers.—See Nuts and Washers.

Weather Strips.
Protective Ventilator Co. s ... dis 25 %

Well Wheels.—Revised list ... dis 60&10 %

Wire.
Brass and Copper ... List of July 1, 1878 dis 10 %
Bright and Annealed ... Nos. 0 @ 18. dis 52½ @ 55 %
" " ... Nos. 19 @ 26, dis 57½ @ 60 %
" " ... Nos. 27 @ 36, dis 62½ @ 65 %
Coppered ... Nos. 0 @ 18, dis 47½ @ 50 %
Galvanized, Nos. 0 to 6 ... ₩ ℔ 10c, dis 30 @ 35 %
" Nos. 7 to 18 ... market list, dis 30 @ 35 %
Tinned, Nos. 0 to 18 ... dis 40 @ 42½ %
Cast Steel ... dis 25 @ 30 %
Tinned Broom Wire, Nos. 18 to 25 ... dis 47½ @ 50 %
Annealed Fence, Nos. 8 and 9 ... dis 55 @ 57½ %
" Grape, Nos. 10 to 14 ... dis 55 @ 57½ %
Galvanized Telegraph, Nos. 7 to 9 ... ₩ ℔ 8½c
" " Nos. 10 and 11 ... ₩ ℔ 9½c
" " No. 12 ... ₩ ℔ 10c
Fence Staples ... ₩ ℔ 7 @ 7½c
" Staples, Galvanized ... ₩ ℔ 9½ @ 10c
Stubs Steel Wire ... $7.00 to £ gold
Japanned Barb Fence ... ₩ ℔ 15c
Galvanized " ... ₩ ℔ 16c
Steel Music Wire, Nos. 12 to 27 ... ₩ ℔ $1.00, net
Judd's Picture Wire ... dis 80&20 %
Clothes Line Wire, Galvanized ... ₩ coil 30 @ 40c net

Wrenches.
American Adjustable ... dis 45 %
Baxter's Adjustable "S," ... dis 20 %
" Diagonal ... dis 20 %
Collins & Co.'s ... dis 45 %
Coes' Genuine ... dis 55 @ 60 %
" Pattern (Wrought) ... dis 70 %
" " (Malleable) ... dis 75&10 %
Girard ... dis 50&10&10 %
Lindsay's " ... dis 25 %
Taft's Pattern ... dis 75&10 %
Davis' Patent Duplex ... new list, dis 25 %
Bemis & Call's Patent Combination ... dis 25 %
" " Merrick's Pattern ... dis 25&2½&20 %
" " Briggs' Pattern ... dis 25&10 %
" " Cylinder or Gas Pipe ... dis 25&30 %
Aiken Pocket (Bright) ... $8.00, dis 55&10 %
The Favorite Pocket (Bright) ... per doz $8, dis 60 %

Wringers. Per doz.
Universal, Cog Wheels, No. 2½ ... $60.00
" " " No. 2 ... 63.00
" " " No. 1½ ... 71.00
Crown No. 2 ... 54.00
" No. 2½ ... 63.00
" No. 3 ... 69.00
Eureka, No. 1 ... 57.00
Novelty, No. 10, with Cog Wheels ... 60.00
" No. 2, " " ... 63.00
Excelsior, No. A, with Folding Bench ... 84.00
" No. E, for Set Tubs ... 66.00
Keystone No. 1, Wood Frame, no Gear ... 54.00
" No. 2, Iron " " ... 54.00
" No. 10, Wood " Common Gear ... 60.00
Peerless, No. 2 ... 63.00
" No. 3 ... 71.00
" No. 2½ ... 60.00

Stamped Tinware.
Common Stamped Ware L. & G. List, April, 1878, dis 50&10 %
Stamped Deep and Retinned Ware, L. & G. List, April, 1878 ... dis 50&10 %

METALS.

IRON.—Duty: Bars, 1 to 1½c. ₩ ℔; Sheet, Band Hoop and Scroll, 1¼ to 1¾c. ₩ ℔; provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 ₩ ton; Polished Sheet, 3c. ₩ ℔; Wrought Scrap, $8 ₩ ton; Cast Scrap, $6 per ton. Railroad 70c. ₩ 100 ℔s. Boiler and Plate, 1½c. ₩ ℔.

Pig Iron—AMERICAN.
Foundry No. 1 ... ₩ ton $16.50 @ 17.50
" No. 2 ... ₩ ton 15.50 @ 16.50
Gray Forge ... ₩ ton 14.50 @ 15 50

SCOTCH.
Eglinton ... ₩ ton 21.00
Coltness ... ₩ ton 22.00 @ 22.50

Rails.
Iron, at mill ... ₩ ton $32.00 @ 36.00
Steel, " ... ₩ ton 41.00 @ 44.00
Old Rails ... ₩ ton 18.50 @ 19.00

Scrap.
Wrought Scrap, from yard ... ₩ ton, nom. 20.00 @ 21.00

Bar Iron, from Store.
Common Iron:
¾ to 2 in. round and square } ₩ ℔ 1 75c
1 to 6 in.x⅜ to 1 in }
Refined Iron:
¾ to 2 in. round and square } ₩ ℔ 2.0c
1 to 6 in.x⅜ to 1 in }
1 to 6 in.x¼ and 5-16 ... ₩ ℔ 2.2c
Rods—⅝ and 11-16 round and square ... ₩ ℔ 2.1c
Bands—1 to 6x3-16 to No. 12 ... ₩ ℔ 2.4c
Swedish Iron:
Ordinary sizes ... 5c

Sheet Iron.

		Common American.	R. G. American.
Nos. 10 to 20		₩ ℔ 2⅞c	4
21 to 24		₩ ℔ 3⅛c	4
25 to 26		₩ ℔ 3¼c	4¼
27		₩ ℔ 3⅜c	4½
28		₩ ℔ 3⅝c	4¾c

Galvanized, 14 to 20, B. B. ₩ ℔ 6⅛c; 2d qual. ₩ ℔ 5⅜c
" 21 to 24, " ₩ ℔ 7⅛c; " ₩ ℔ 6 c
" 25 to 26, " ₩ ℔ 7⅝c; " ₩ ℔ 6½c
" 27 " ₩ ℔ 8⅛c; " ₩ ℔ 7 c
" 28 " ₩ ℔ 9 c; " ₩ ℔ 7½c
Patent Planished ... ₩ ℔ A, 10½c; B, 9½c
Russia ... ₩ ℔ Nos. 8 to 12, 15c; 13 to 16, 12 @ 12½c
American Cold Rolled ... ₩ ℔ 4½c

COPPER.—Duty: Pig, Bar and Ingot, 5c; Old Copper, 4c ₩ ℔; Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.
American Ingot ... ₩ ℔ See Trade Report.

SHEATHING, BRAZIERS' COPPER, BOLTS, &C.
Braziers' Copper, ordinary sizes, over 16 oz., ₩ sq. ft ... ₩ ℔ 25c
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., ₩ sq. ft ... ₩ ℔ 27c
Braziers Copper, 10 oz and 12 oz., ₩ sq. ft ... ₩ ℔ 29c
" Lighter than 10 oz. ₩ sq. ft ... ₩ ℔ 31c
Circles less than 84 in. in diameter ... ₩ ℔ 28c
Circles 84 in. diameter and over ... ₩ ℔ 31c
Segment and Pattern Sheets ... ₩ ℔ 28c
Locomotive Fire Box Sheets ... ₩ ℔ 26c
Sheathing Copper, over 12 oz. ₩ sq. ft ... ₩ ℔ 23c
Bolt Copper ... ₩ ℔ 25c
Copper Bottoms ... ₩ ℔ 25c
No Copper is Sheathing except 14x48 inches and not to exceed 34 oz. to the sq. ft.

TINNING.
14x48, by the case ... ₩ sheet 6c
14x48, less than case ... ₩ sheet 8c
For tinning both sides, double the above amount.

O'NEILL'S PATENT PLANISHED COPPER.—Dis 7½ @ 10 %.
14x48.
14 and 16 oz. and heavier .. ₩ ℔ 34c By the case. ₩ ℔ 33c
12 oz. and lighter ... ₩ ℔ 37c " " ₩ ℔ 36c

Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60.
14 and 16 oz. and heavier. ₩ ℔ 36c By the case. ₩ ℔ 35c
(And all sizes not over 20 in. wide.)
30x60.
14 and 16 oz. and heavier ... ₩ ℔ 38c
12 oz ... ₩ ℔ 41c

Brass.
Brown & Sharp's Gauge the Standard for Metal; Old English Gauge the Standard for Wire.

BRASS MANUFACTURERS' PRICE LIST.—dis nominal. July 1, 1878.

Cash prices for Roll and Sheet Brass. For less quantity than 100 ℔s. add 3c ₩ ℔.

HIGH BRASS.
All Nos. not thinner than to No. 28, wider than 2 in., not wider than 14 in ... 25c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive ... 30c
All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive ... 33c
½c. ₩ ℔ advance on each No. above Nos. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass, at ... 48c
Sheets 24x48, and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in. 32c
Printers' Rules ... 40c
Sheets wider than 30 in. and under 40 in ... 42c
" " 40 in. and over ... 45c
Circular Sheets, in diam. from 4 in. to 14, inclusive. 35c
" " over 14 " 20, " .. 40c
" " " 20 " 30, " .. 44c
" " " 30 " 40, " .. 50c
" " " 40 in ... 54c

LOW BRASS.
4c ₩ ℔ more than High Brass.
Gilding Metal, 8c ₩ ℔ more than High Brass.
Platers' or Gold Metal { In Bars ... 43c
{ Sawed ... 46c
{ Planed or Polished ... 49c

FOR SLITTING.
Metal in width 2 in. to ½ in. to No. 28, inclusive, 1c. ₩ ℔ advance.
Metal, in width 2 in to 1 in., thinner than No. 28, 2c. ₩ ℔ advance.
Metal, in width 1 in. to ½ thinner than No. 28, 3c ₩ ℔ advance.
Metal, in width ½ in. to ¼, inclusive, not thinner than No. 28, 2c. ₩ ℔ advance.
Metal, in width ½ in. to ¼ thinner than No. 28, 5c. ₩ ℔ advance.
Metal, ¼ in. in width and less, 10c. ₩ ℔ advance.
Any of the above widths cut to particular lengths, add 7c. ₩ ℔.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
4 per cent., 12 inch, to No. 26	$0.52	$0.70
6 " " "	56	76
10 " " "	64	.88
15 " " "	.74	1.03
18 " " "	.80	1.12

German Silver Sheets over 12 in. wide and weighing more than 10 ℔s., $2.00 ₩ ℔.
Advance 2c. for each additional inch in width above 12 in., and 2c. ₩ ℔ on each No. thinner than Nos. 26 to 36, inclusive
All German Silver thinner than No. 36 is Platers, at 50c ₩ ℔ additional.
German Silver Scrap one-half less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	Low Brass.	Gild'g and Copper.
No. 0 to 20	$0.28	$0.32	$0.36
No. 21	.31	.35	.41
No. 22	.32	.36	.42
No. 23	.33	.37	.43
No. 24	.36	.39	.45
No. 25	.38	.42	.48
No. 26	.40	.44	.50
No. 27	.43	.47	.53
No. 28	.47	.51	.58
No. 29	.50	.54	.61
No. 30	.53	.57	.67
No. 31	.57	.61	.73
No. 32	.61	.65	.79
No. 33	.65	.69	.88
No 34	.69	.73	.98

Spring Wire 2c ₩ ℔ advance.
Flat, Square and Half Round Wire 5c ₩ ℔ advance on Round Wire.
Fancy Wire not less than 10c ₩ ℔ advance of Round Wire.
Brass Rods, No. 8 and larger not less than 2 feet lengths, 33c.
Wire straightened and cut, smaller than No. 8, and not less than 2 feet lengths, 38c.
Wire and Rods less than 2 feet lengths, special rates.
Twelve cents per ℔ extra for spooling on 1 ℔ spools.

MISCELLANEOUS.
Common Plain Brass Pail Ears ... $0.36
Brass Door Rail ... .38

SCRAP.—net.
High Brass Scrap ... 11c
Low " ... 13c
Gilding ... 15c
Turnings, Filings and Chips half the price of Scrap.
Terms—Net cash. Interest to be added after thirty days.

TUBING.—dis 10 % ₩ ℔
Plain to No. 20 inclusive, above ¼ in. to 3 in ... $0.38
" above 3 in ... .48
Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cents advance on List for each Number.
Above No. 26, special rates.
Plain, ¼ inch ... .65
" 3-16 " ... 1.05
" ⅛ " ... 1.55
All Mandrel Drawn Tubes, 5 cents advance on List Prices.
Fancy Tubing to No. 20 ... 45c
English, Scotch and Extra Patterns Fancy Tubing to No. 20 ... .50
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.
Add to 2 cents ½ cent for each additional cutting under 2 feet.
All Mandrel Drawn Tubes under ⅜ in., 25 cents per pound advance.

ZINC TUBING.—net.
Plain ... .22
Fancy ... .28
Scotch and Extra Patterns ... .31

GERMAN SILVER TUBING.—dis 10 %
4 Per cent ... .75
6 " ... .85
9 " ... 1.00
12 " ... 1.15
15 " ... 1.20
16 " ... 1.35
18 " ... 1.45
20 " ... 1.55

STEEL.—Duty: Bars, Ingots, Sheets and Coils, valued at 7 cents ₩ ℔., or under, 2¼ cents; over, 7 cents, and not above 11, 3 cents ₩ ℔; over 11, 3½ cents ₩ ℔, and 10 % ad val. Railway Bars, 1¼ cents ₩ ℔. Railway Bars, in part Steel, 1 cent ₩ ℔. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.
Tool ... 15c
Spring ... 7c
Homogeneous ... 12½c
Boiler Plate ... 8c
Tire ... 6½c
Machinery (round and square) ... 9c
File ... 9c
Sheet ... 11 @ 16c
Saw Plate, mill and mulay ... 14 @ 16½c
" gang and X cut ... 13 @ 14c
" circular as to size ... 18 @ 30c

Chrome Steel.
Tool ... ₩ ℔ 14 @ 15c
Tool, extra fine ... ₩ ℔ 40 @ 75c
Spring ... ₩ ℔ 8 @ 9c
Machinery ... ₩ ℔ 8 @ 10c
Gun or Homogeneous ... ₩ ℔ 12 @ 16c

English Steel.—Payable in gold, net.
" Best Cast ... ₩ ℔ 15½c
" Extra Cast ... ₩ ℔ 16½c
" Round Machinery, Cast ... ₩ ℔ 10c
" Swaged, Cast ... ₩ ℔ 18c
" Best Double Shear ... ₩ ℔ 15½c
" Blister, 1st quality ... ₩ ℔ 13c
German Steel, Best ... ₩ ℔ 11c
" 2d quality ... ₩ ℔ 10c
" 3d quality ... ₩ ℔ 9c
Sheet Cast Steel, 1st quality ... ₩ ℔ 15½c
" " 2d quality ... ₩ ℔ 14½c
" " 3d quality ... ₩ ℔ 12½c

ANTIMONY ... 13½ to 14c

LEAD.—Duty: Pig $2 ₩ 100 ℔s; old Lead, 1½c ℔ ₩ Pipe and Sheet, 2½c ₩ ℔.
American ... 4⅛ @ 4¼c
Bar ... 5c. dis 10 %
Pipe ... 5c. dis 10 %
Tin Lined Pipe ... 12c, dis 10 %
Sheet ... 5¾c, dis 10 %
Shot ... Drop 6½c, Buck, 7½c, dis 10 %

BABBITT METAL.
N. P. U ... ₩ ℔ 6 @ 7c
A 20c: B, 16c: C, 12c: D, 10c ₩ ℔.

TIN.—Duty: Plates, Sheets, Tagger and Terne, 1.1c ₩ ℔; Electro-galvanized Plates, 2c ₩ ℔; Manufactures of, not enumerated, 35 per cent. ad. val. Bars, Block and Pigs free. Banca, subject to duty of 10 per cent.
Banca ... ₩ ℔ 20c
Straits ... ₩ ℔ 18 @ 19 currency
English ... ₩ ℔ 17 @ 18 currency

TIN PLATES, CURRENCY PRICES
I C 10x14, 12x12, 14x20 } Prime Charcoal ... $6.00 @ 6.25
I X 10x14, 12x12, 14x20 } Prime Charcoal ... 8.00 @ 8.25
D C 12½x17 " ... 5.50 @ 5 75
D X 12½x17 " ... 7.50 @ 7.75
For each additional X add ... 2.00

COKE TIN PLATE.

	Best.	2d quality.	Ordinary.
I C 10x14, I C 12x12, I C 14x20	$5.75	5.50	5.25

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$5.50	5.25	5.00 @ 5.12½
I X 14x20	@ 7.50	....	....
I C 20x28	11.50	11.00 @ 11.25	10.00 @ 10.50
I X 20x28	@ 10.00	....	....
I C 20x200	@ 17.50	.. .	....
I C 14x20 M. F. Brand		$7.25	....

SOLDER ... No. 1, 10⅞ @ 11c No. 2, 8½ @ 9½c

SPELTER—Duty: In Pigs, Bars and Plates, $1 ₩ 100 ℔s.
American, cash ... 5¼ @ 5½c
Bergen Port from LehighOre ... 9c, gold
Lehigh, on spot ... 10c

ZINC.—Duty: Pig or Block, 1.50 ₩ 100 ℔s. Sheet, 2½c ₩ ℔.
Sheet, Cask ... 5¾c
" Open ... 6¼c @ 6½c

Paper Stock, Old Metals, &c

(Dealer's Selling Price.)
Canvas linen ... 4 @
" cotton, No. 1 ... 4 @
" No 2 ... @ 2
White linen rags, No. 1 ... 4 @
" " No. 2 ... 2½ @
Seconds ... 1½ @ 1¾
Mixed woolens ... 2½ @ 3¼
Soft woolens ... 8½ @
Gunny bagging ... 3⅜ @
Jute Butts ... 3 @ 3⅜
Kentucky bagging ... 5 @
Waste paper and scraps ... @ ¾
Rope cuttings ... 1½ @ 3
Kentucky bale rope ... 4 @ 4½
Grass rope ... @ 2¾
Tarred shaking ... 2 @
White collar cuttings, all paper ... 7 @
" " " muslin lined ... 5 @
" " Envelope ... 7 @
Hard White Shavings, No. 1 ... 4 @
Soft " " No. 1 ... 3½ @
White Shavings, No. 2 ... 3¼ @
Mixed Shavings, part white ... 2¼ @
Imperfections, No. 2, best folded sheets ... 3¼ @
" No. 1, Heavy Stock ... 3½ @
Book Stock ... @ 3¼
" Heavy ... 3 @
" " Light ... 1¼ @
Newspaper Stock ... 1½ @ 1¾
Prints ... 1½ @ 2
Pure Manilas ... 2¾ @ 2½
Bogus Manilas and Hardwares ... 1 @
Commons ... ½ @
Binders' Board Cuttings ... 1 @ 1¼
Straw Board Cuttings ... ¾ @
Woolen Tailor Clips ... 13 @ 14
Satinet " ... 2 @ 2½

Old Metal.
Copper, heavy ... 15 @
Copper Bottoms ... 12½
Yellow Metal ... 13 @
Brass, light ... 9 @
" heavy ... 11 @
Heavy Composition ... 12½ @
Old Lead, solid ... @ 3½
Tea Lead ... @ 2¾
Zinc ... @ 3¼
Pewter, No 1 ... 11 @
" No. 2 ... 9 @
Wrought Iron ... per ton $17.00
Machinery Iron ... per ton 12 00
Light Iron ... per ton 10.00
Stove Plate ... per ton 10.00
Grate Bars ... per ton 4.00

Paints, Oils, &c.

Paints.
Black Lamp, Coach Painters ... ₩ ℔ 20c
" " Ordinary ... 6c
" Ivory Drop, fair ... 12 @ 15c
" " best ... 23c
Black Paint, in oil ... kegs, 8c asst'd cans, 11c
Blue, Prussian, fair to best ... 40 @ 150
" " " in oil ... 45 @ 160
Blue Chinese dry ... 85c
" Ultramarine ... 18 @ 20c
Brown, Spanish ... 1¼c
" Van Dyke ... 10@12c
Carmine, 40 ... combination price
Green, Chrome ... 15 @ 23c
" " in oil ... 14 @ 18 @ 25c
" Paris ... good 25c; best, 30c
" " in oil ... " 30c; " 45c
Iron Paint, Bright Red ... ₩ ℔ 2¼c
" Red ... ₩ ℔ 2c
" Brown ... ₩ ℔ 1½c
" Purple ... ₩ ℔ 3c
" Ground in Oil, Bright Red ... ₩ ℔ 5½c
" " " Red ... ₩ ℔ 5c
" " " Brown ... ₩ ℔ 4½c
" " " Purple ... ₩ ℔ 6c
Mineral Paints ... 1¼ @ 4c
Orange Mineral ... 12c
Red Lead, American ... 7½c
" " English ... 9½c gold
" Venetian (N. C.) dry ... $1.70 @ $1.75
" " in oil ... asst'd cans, 11c; kegs, 8c
" Indian dry ... 9 @ 12c
Rose Pink ... 10 @ 13c
Sienna, American, Raw ... 4c
" Burnt ... 4½c
" " in oil ... 10 @ 16 @ 20c
" Raw " ... 11 @ 15 @ 25c
Umber, Burnt ... 4 @ 8c
" " in oil ... 9 @ 12 @ 16c
" Raw ... 3½ @ 7½c
" " in oil ... 10 @ 16 @ 18c
Vermillion, Chinese ... 90c, gold
" English ... 60c, gold
" Trieste ... 1.10, gold
" American, Common ... 18c
White Lead, American, pure dry ... 8c
" " " in oil ... 8c
White, Paris, English, prime ... in bbls. 2 @ 2½c
Yellow Ochre, French ... $1.75
" " " in oil ... asst'd cans, 11c; kegs, 8c
" " Vermont ... in casks 1½c
Yellow Chrome ... 17 @ 27c
" " in oil ... 14 @ 18 @ 25c
Zinc White, American No. 1, dry ... 8½c
" " No. 1, in oil ... 11c
" French (Paris) ... 11c
" " in oil ... 13½ @ 11½c

Oils.
Linseed, Raw, in casks and bbls ... ₩ gal. 60c & 62c
" Boiled. " " ... 65c & 67c
Bleached Whale ... ₩ gal. 53c
" Sperm ... ₩ gal. $1.00
" Elephant ... 55c
Signal ... 55c
Prime Lard ... 53c
No. 1 " ... 49c
West Virginia ... 18c @ 25c
Drilling ... 45c
Empire Cylinder ... 65c
Miners' Oil ... 35 to 45c
Fish Oil, pressed ... 34c
Neatsfoot ... 70c
Tallow ... 60c
Machinery ... 40c
Engine ... 50c

Sundries.
Asph atum ... 0c
Benzine ... ₩ gal, 16c
Chalk ... ¾c
" Block ... ¾c
Dryer, Patent, Am'n ... ass't cans, 10½c; keg, 9c
Frostings ... 50c
Glue, White ... 33 @ 44c
" Sheet ... 20c
Glaziers' Points, Zinc ... 60
Gum, Copal ... 36c
" Damar ... 25c
" Shellac, English ... 30c
" " dark ... 25c
Litharge, English ... 9c gold
Mineral Wool ... ₩ ℔ 1¼ @ 1½c
Pumic Stone, selected Lumps ... 4 @ 6c
" powdered ... 2¾c
Putty, in bladders ... 2¼c
" in bulk ... 2c
Rotten Stone, soft, English ... 8c
Spirits Turpentine ... 30c
Whiting Spanish ... ¾c

Glass.
FRENCH WINDOW GLASS.
Prices current per box of 50 feet.

Single Thick.—discount 60&5 %

SIZES.	1st.	2d.	3d.	4th
6 x 8 to 10 x 15	$ 7.50	$ 6.75	$ 6.25	$ 5.75
11 x 14 to 16 x 24	8.50	7.75	7.25	5.50
13 x 22 to 20 x 30	10.75	9.75	8.75	[illegible]
15 x 36 to 24 x 30	12.25	10.75	9.00	
26 x 28 to 24 x 36	13.00	11.50	9.75	
26 x 37 to 26 x 44	14.50	13.25	10.75	
26 x 46 to 30 x 50	15.00	14.00	11.25	
30 x 52 to 30 x 54	16.00	14.50	12.00	
30 x 56 to 34 x 56	17.25	15.50	13.50	
34 x 58 to 34 x 60	18.25	17.25	15.00	
36 x 60 to 40 x 60	20.75	18.75	17.25	

Double Thick.—Discount 60&15 %

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$12.00	$11.00	$10.00	$ 9.[illegible]
11 x 14 to 16 x 24	13.75	12.50	11.75	[illegible]
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 26 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	25.75	23.25	19.25	
30 x 56 to 34 x 56	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

Sizes above 40 x 60—$10.00 per box extra for every five inches.
An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 50 inches in length, and not making more than 81 united inches, will be charged in the 84 united inches bracket.

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R. H. WOLFF & CO.,

IMPORTERS OF

IRON AND STEEL.

Sole Agents for the Sale of the Celebrated

Pr. HOMOGENEOUS DEC.' CAST STEEL, GUN BARRELS, MOULDS AND ORDNANCE.

Sole Agents for **COCKER BROTHERS,** Limited,

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SHEFFIELD, ENGLAND.

Sole manufacturers of

"(SC) EXTRA' Cast Steel,

AND

CAST STEEL WIRE for all purposes.

Sole Makers of

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Railroad Supplies and General Merchants.

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Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools, warranted not to crack in hardening Taps of any size.
Swede Spring Steel, especially adapted to Locomotive and Railway Car Springs.
English Spring and Plow Plate Steel.

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CRESCENT STEEL WORKS

MILLER, METCALF & PARKIN,

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Manufacture the Favorite Brands of

Crescent, Crescent Extra, Crescent Special

TOOL STEEL.

Polished, Compressed Drill Rods and Wire,

Warranted equal to any imported in *quality, finish and accuracy.*

Bright Cold Rolled Strips to No. 36, Fine Hot Rolled Sheets to No. 30.

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MERCHANT BARS, TIRE AND SHAFTING,

Railroad Iron, Pig Iron, Merchant and Ship Iron,

AGENCIES IN BOSTON AND PHILADELPHIA.

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BROWN'S **HOG AND PIG** RINGER and RINGS

Only single Ring in the market that closes on the outside of the nose. No sharp points in the nose to keep it sore.

Ringers, 75c. Rings, 50c. 100. Holders, 75c. Huskers, 10c.

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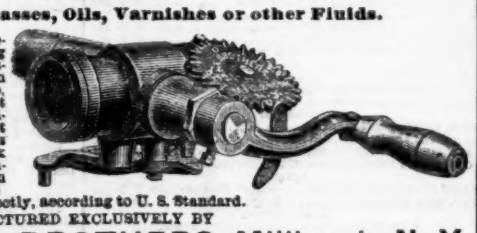
LANE'S MEASURING FAUCET.

Price, $3.00.

For Light or Heavy Molasses, Oils, Varnishes or other Fluids.

We warrant these Faucets to be as represented, measuring correctly and working more easily in heavy molasses than any Measuring Faucet in the market. No grocer can afford to be without them, for they save time, and "time is money." They insure perfect cleanliness, requiring no tin measures or funnel to collect dirt and draw flies. They do not drip. They prevent all waste, as no molasses or other fluid can pass except when the crank is turned. They are the embodiment of simplicity, and consequently they are always in order. They work easily in the heaviest molasses. They are warranted to measure correctly, according to U. S. Standard.



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General Agency, GRAHAM & HAINES, 113 Chambers St., New York

THE IRONMONGER

The Ironmonger & Metal Trades' Advertiser.

A WEEKLY TRADE JOURNAL.

PUBLISHED EVERY SATURDAY, AT 44a CANNON STREET, LONDON, E. C.,

And issued in 53 Numbers, one in the form of a handsome Diary and Text Book, adapted to the Ironmongery and Metal Trades.

"THE IRONMONGER" was established in 1859, and is the oldest and chief representative organ of the Iron, Hardware and Metal Trades. This journal stands pre-eminent amongst trade publications, and possesses all the advantages of the Commercial Newspaper and a high-class Literary Magazine. The principal characteristics of the "THE IRONMONGER" are the accuracy of its Market Reports and Prices Current; the intrinsic value of its Home, Foreign and Colonial Correspondence; the impartiality of its criticism upon the leading novelties of the day; its careful selection of Agricultural, Legal and Magisterial News appertaining to the Metal Trades; the completeness of its list of Patents and General Statistics, and its multiplicity of classified Advertisements. The main object of this publication is to furnish a faithful record of all things of specific value to those interested in the manufacture, purchase, consignment, shipment or sale of Hardware, Arms and Ammunition, Oils, Seeds, Implements, Machinery and Metals.

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Turns out at least **double work** by increased speed and feed, **and cuts harder metals** than any other Steel. Neither hardening nor tempering required.

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Represented by

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STEELINE.

Used for refining and tempering all kinds of Steel Tools.

Increases their Durability at least five fold.

Secures absolute safety from cracking.

Send for circular to

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DUPONT'S

Rifle, Sporting and Blasting Powder

The most popular Powder in use.

Dupont's Gunpowder Mills, established in 1801, have maintained their great reputation for 78 years. Manufacture the following celebrated brands of Powder:

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Nos. 1 (coarse) to 4 (fine), unequaled in strength, quickness and cleanliness; adapted for Glass Ball and Pigeon Shooting.

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Nos. 1 (coarse) to 3 (fine), burning slowly, strong and clean; great penetration; adapted for Glass Ball, Pigeon, Duck and other shooting.

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A quick, strong, clean Powder of very fine grain for Pistol shooting.

DUPONT'S RIFLE, Fg, "Sea Shooting," FFg and FFFg.—The Fg for long range rifle shooting, the FFg and FFFg for general use, burning strong and moist.

Also all kinds of Sporting, Mining, Shipping and Blasting Powders of all sizes and descriptions. Special grades for export. Also, Musket, Cannon, Mortar and Mammoth Powder, U. S. Government standard. Powder manufactured to order of any required grain or proof. Agencies in all cities and principal towns throughout the U. S. Represented by

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N. B.—Use *none* but **Dupont's Fg** or **FFg** Powder for long-range Rifle shooting.

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Manufacture and sell the following celebrated brands of Sporting Powder known everywhere as

ORANGE LIGHTNING,
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more popular than any Powder now in use.

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Military Powder on hand and made to order.

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Pamphlets showing sizes of grain sent free.

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Established 1838.

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Bell Metal Kettles.

R. BLISS MFG. CO.,

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PLATFORM SPRING WAGON GEAR.

Patented Oct. 31, 1876, and May 14, 1878.

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New York Office, 57 Broadway.

The members of the Edgar Thomson Steel Company, Limited, have had large experience in manufacturing and in railway management; their works are the most complete in the world, with all the late improvements, and are located in the best Bessemer metal district in the United States, and their managing officers are experienced in the manufacture of Bessemer Steel.

The Company warrants its rails equal in quality to any manufactured in the United States.

Rails of any weight or section furnished on short notice. Orders for trial lots solicited.

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BUTCHERS' KNIVES,
BUTCHERS' STEELS,
AND
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ESTABLISHED 1857. CAPITAL, $3,000,000. INCORPORATED 1869.

Works at Chicago, Ill., and Milwaukee, Wis.

MANUFACTURERS OF

MERCHANT BAR, FISH PLATES, PIG METAL, IRON RAILS & BESSEMER STEEL RAILS.

CAPACITY OF WORKS.

Fish Plates	20,000 tons.
Merchant Bar	40,000 "
Pig Metal	80,000 "
Iron Rails	80,000 "
Steel Rails	60,000 "
Total Capacity per year	280,000 "

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37 Mitchell Block, Milwaukee, Wis.

O. W. POTTER, President, CHICAGO.
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HERMANN BOKER & CO.,

OFFICES AND WAREHOUSES:

NEW YORK, 101 and 103 Duane and 91 and 93 Thomas Streets.
REMSCHEID and SOLINGEN (Prussia.) H. BOKER & CO.
SHEFFIELD (England), No. 3 Arundal Lane, Represented by Mr. ARTHUR LEE.
LIEGE (Belgium), Represented by Mr. LOUIS MULLER.

Manufacturers and Importers of **Cutlery, Guns, Hardware** and **Railroad Material.**

Proprietors of **TRENTON VISE AND TOOL WORKS, Trenton, N. J.**—Vises, Picks Mattocks, Grub Hoes, Sledges, Hammers, Bridge Work, Turn Tables, etc.

Proprietors of the **MANHATTAN CUTLERY CO.,** "O. K." Razors.

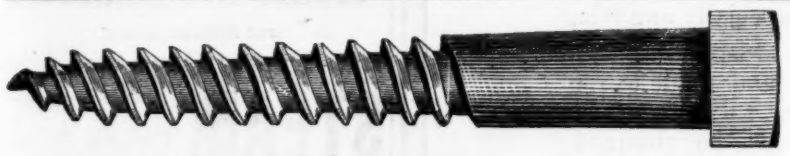
LAMSON & GOODNOW MFG. CO., Shelburne Falls, Mass.—Table Cutlery and Butcher Knives.

Sole Agents for **R. HEINISCH SONS' CELEBRATED TAILORS' SHEARS, TRIMMERS, SCISSORS, &c.,** both Japanned and Nickel-Plated.

Gardner's Pocket Knives. Trenton Anvils.

We always have on hand a full assortment of

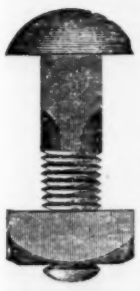
German and English Hardware, Cutlery, Guns, Gun Material, Chains, Heavy Goods.



WM. H. HASKELL & CO.

Pawtucket, R. I.,

MANUFACTURERS OF



COACH SCREWS

(With Gimlet Points),

ALL KINDS OF

Machine and Plow Bolts,

FORGED SET SCREWS,

AND

TAP BOLTS.

BUERK'S

Watchman's Time DETECTOR.

IMPORTANT FOR ALL LARGE CORPORATIONS AND MANUFACTURING CONCERNS.

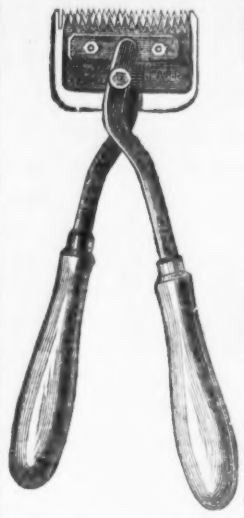
Capable of controlling with the utmost accuracy the motion of a watchman or patrolman as the same reaches different stations of his beat. The instrument is complete in itself, portable and as reliable as the best lever watch. It requires no fixture or wires communicating from room to room, as is the case with the ordinary watch clocks. A small, inexpensive stationary key is alone required at each station. The instrument will, in all cases, be warranted perfect and satisfactory.

N. B.—The suit against Imhaeuser & Co., of New York, was decided in my favor, June 10, 1874. Another suit has been decided against them and a fine assessed Nov. 11, 1876, for selling contrary to the order of the Court. Persons using clocks infringing on my Patent will be dealt with according to law.

J. E. BUERK, Proprietor,

P. O. Box 979. *No. 230 Washington Street, Boston.*

☞ In sending for circular or ordering the above, please mention this paper. ☜



HERMANN BOKER & CO.,

101 and 103 Duane St., New York,

SOLE AGENTS FOR

Peugeot Brothers'

Patent Improved

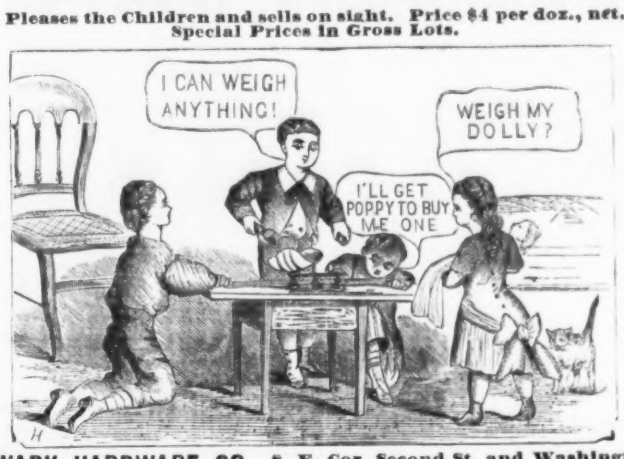
HORSE CLIPPERS.

The cutting parts are made of the very best English Cast Steel. The upper knife passes over two teeth. There is a protecting plate which gives the Clipper great strength. The iron parts of the handles are all wrought, not malleable, iron, and adjusted so that there is no danger of the handles getting broken. Every Clipper is carefully examined before leaving the factory. Quick and easy working can be guaranteed.

The Latest Novelty.

OUR TOY SCALE, TO PLAY STORE WITH.

Pleases the Children and sells on sight. Price $4 per doz., net. Special Prices in Gross Lots.



SOUTHWARK HARDWARE CO., **S. E. Cor. Second St. and Washington Ave., PHILADELPHIA, PENN.**

Manufacturers of Three Grades of Counter Scales.

Equal to the best and lower in price. Send for Illustrated Catalogue.

CLARK & CO.,

MANUFACTURERS OF

BUILDERS' HARDWARE,

426 and 428 Niagara Street,

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Send for Catalogue and Price List.

Wheeler, Madden & Clemson MFG. CO.,

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Manufacturers of

WARRANTED CAST STEEL

SAWS

Of every description, including

Circular, Shingle, Cross-Cut, Mill, Hand, WOOD SAWS, Etc., Etc.

Harvey W. Peace, Vulcan Saw Works.

Manufacturer of every kind of

Patent Ground SAWS.

TRADE MARK. HARVEY W. PEACE & Co.

Circulars, Cross-Cuts, Mill Mulay, Gang, Hand. and Butcher.

Molding and Planing Knives. Plastering Trowels, Mitering Rods, &c.

Union Avenue, Tenth and Ainslie Streets, BROOKLYN, E. D., N. Y.

AMERICAN SAW CO.,

Manufacturers of

Movable Toothed Circular Saws,

PERFORATED CROSS-CUT SAWS

And SOLID SAWS of all kinds. Trenton, N. J.

Ludlow Valve Mfg. Co.,

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938 to 954 River St. & 67 to 83 Vail Ave., Troy, N. Y.,

VALVES.

Double and Single Gate, ¼ in. to 48 in.—outside and inside Screws, Indicator, &c. for Gas, Water and Steam. Send for Circular.

Also FIRE HYDRANTS.

Emery, Grindstones, &c.

Walter R. Wood, GRINDSTONES.

Berea, O., Nova Scotia, & other brands

283 and 285 Front Street, New York.

WORTHINGTON & SONS,

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Manufacturers of

Lake Huron Amherst and Berea GRINDSTONES.

H. S. WOOD & CO.,

Manufacturers of	Importers of
Berea, O.	New Castle, Eng.
Black River, O.	Wickersley, Eng.
Lake Huron, Mich.	Novia Scotia.

GRINDSTONES,

33 West and 58 Washington Sts., N. Y.

BOYD & CHASE,

The largest manufacturers in the world of

OIL 

STONE

Of all description.

107th Street and Harlem River,

Send for Illustrated Price List. NEW YORK.

A. F. PIKE,

East Haverhill, New Hampshire,

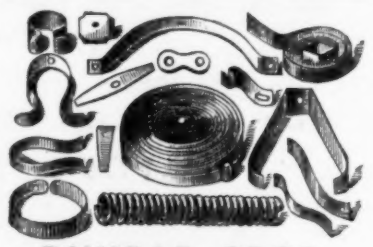
Manufacturer and Wholesale Dealer in

Scythe, Axe, Knife and Hacker STONES.

LETOILE,
UNION,
PREMIUM,
DIAMOND GRIT,
WHITE MOUNTAIN,
INDIAN POND (red ends)

Stones gotten up or labeled in any style desired. Price and quality guaranteed.

Our Stones are of good keen cut and *will not glaze.*



DUNBAR BROS.,

Manufacturers of

Clock Springs and Small Springs

of every description, from best Cast Steel,

BRISTOL, CONN.

Coal.

A. PARDEE, Hazelton, Pa. J. G. FELL, Phila.

A. PARDEE & CO.

303 Walnut St.,

PHILADELPHIA.

No. 111 Broadway, New York.

MINERS AND SHIPPERS OF

Lehigh Coals.

The following superior and well known Lehigh Coals are mined by ourselves and firms connected with us, viz.

A. Pardee & Co.	HAZLETON, CRANBERRY, SUGAR LOAF.
Pardee, Bro. & Co	LATTIMER.
Calvin Pardee & Co.	HOLLYWOOD.
Pardee, Sons & Co.	Mt. PLEASANT.

THE HOBOKEN COAL CO.,

Dealers in

SCRANTON, LEHIGH and other **COALS.**

Retail Yard on D. L. & W. Railroad, cor. Grove and 19th Sts., Jersey City. Coal delivered direct from Shutes to Carts and Wagons. Families and manufactories supplied with the best qualities of Coal at the lowest rates.

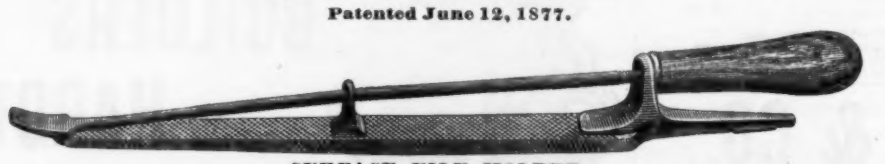
OFFICES At Yard cor. Grove and 15th Sts.; cor. Bay St. and Newark Ave, Jersey City; Room 35, 11 Broadway, N. Y. General Office, Bank Building, cor Newark and Hudson Sts., Hoboken. P. O. Box 241, Hoboken.

METALLIC SHINGLES.

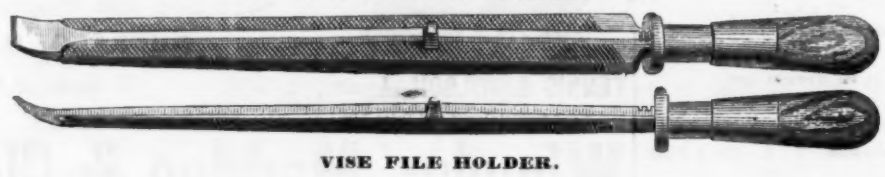
We call the attention of all parties interested in Roofing, and the owners of large buildings, to the above article. It is superior to slate, cheaper, fire proof, about one-fourth the weight, lays much closer, therefore is storm proof, cannot crack, &c. Any carpenter can put them on. Send for description and Price List to **Iron Clad Manufacturing Co.,** 59 Greenpoint Av., Brooklyn, E. D. P. O. Box, 2526, N. Y. City.

FILE HOLDERS.

Patented June 12, 1877.



SURFACE FILE HOLDER.



VISE FILE HOLDER.

The object of the inventions herewith illustrated is to provide a device in which files may be firmly held for service in surface filing, and while in this condition *readily sprung*, in order to give, at the will of the operator, more or less convexity to the working face of the file.

By the use of this device it is not essential that files, to be used upon broad surfaces, should be selected with the care usually bestowed to obtain a true convexity or "belly" to their sides; the trouble of such selection every master mechanic knows to be especially annoying and vexatious.

By its use, also, files may be more fully utilized and made to render greater service than without it: 1st, By insuring full use of the side, which, were the file crooked, could not otherwise be obtained; and, 2d, By being able, when the file becomes slightly dulled, by increasing its convexity, to lessen the number of teeth brought to bear upon the work, thus causing the lesser number of teeth which bear to penetrate or "bite" the work without increased labor bestowed by the operator.

The utility of the *Surface File Holder* will at once be apparent to the mechanic in its application to broad cast-iron surfaces.

The *Vise File Holder* will also be found a useful tool, particularly the smaller sizes, as by its use the file may be sprung to a degree enabling the workman to file in the exact spot required (always important where nicety of finish is requisite), in fact, utilizing the file in a manner never before accomplished.

These several file holders will be designated and their range of sizes understood by the following numbers:

Vise	File	Holder,	No.	1,	adapted to hold files			5 and	6	inches long.		
"	"	"	"	2,	"	"	"	8 "	10	"	"	
"	"	"	"	3,	"	"	"	12 "	14	"	"	
Surface File Holder,			No.	4,	"	"	"	12, 13 and	14	inches long.		
"	"	"	"	5,	"	"	"	14, 15 "	16	"	"	

PHILADELPHIA.

(Corrected weekly by Lloyd, Supplee & Walton).

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.
Peter Wright's, ₩ ℔, gold..........10½c
over 250 lbs..........11c. gold, net
Wilkinson's, ₩ ℔, gold..........11c. net
Eagle (American)..........9 cents per lb—dis 20%

Apple Parers.—
Reading No. 72..........per doz $ 5 00 net
" " 74.......... " 6 00 net
" " 75.......... " 7 00 net
" " 78.......... " 7 50 net
Peach Parers.......... " 10 00 net
Little Favorite, corer and slicer.... " 7 50 net
Lots of 10 to 25 dozen special price.

Axes.—
Mann's Red Warrior ......Per doz. $8 50 @ 9 00 net
Red Indian.......... " 8 50 @ 9 00 net
Red Chieftain, bevelled.......... " 9 00 @ 10 00 net
Crown Prince.......... " 9 50 @ 10 50 net

Augers and Auger Bits.—
Bates' Nut Augers..........dis 40&10 @ 50 %
Cook's Augers..........dis 50 @ 50&5 %
Watrous' Ship Augers..........dis 15 %
Benjamin Pierce Auger Bitts..........dis 40 %
Griswold Auger Bits..........dis 40&10 @ 50 %
Cook's " " ....dis 50 @ 50&5 %
Jennings' " " ....dis 10&10 %
Bonney's Pat. Hol. Augers, list $48 ₩ doz...dis 25&10 %
Stearns' Pat. Hol. Augers " $48 " ...dis 25&10 %

Balances.—
Light and "Common"..........dis 25&10 %
All other Spring Balances..........dis 25 %

Bells.—
Bevin Bros. Mfg Co. Light Hand Bells......dis 70 @ 75 %
Swiss Pattern Hand Bells..........dis 50 @ 50&10 %
Connell's Door Bells..........dis 50 @ 50&10 %
Gt. Western & Kentucky Cow, new list..........dis 50 %

Bolt and Rivet Clippers.
Chambers' No 1, for ⅜ bolts, each ...$ 7·50 }
" " 2, " ½ " ... 9·00 } dis. 25 %
" " 3, " ⅝ " ... 12·00 }

Boring Machines.—
Upright, with Augers..........List $9 00 dis 40&10 %
" without Augers.......... " 5 50 dis 40&10 %
Angular, with Augers.......... " 11 00 dis 40&10 %
" without Augers.......... " 7 00 dis 40&10 %

Bolts.—Eastern Carriage Bolts..........dis 75&3 %—cash
Philadelphia " " ......dis 60&10 @ 60&20 %
Stanley, Wrought Shutter..........dis 50 %

Braces.—Barber's..........dis 40&5 %
Backus..........dis 50 @ 50&10 %
Spofford..........dis 50 %
American Ball..........dis 25&10 %

Butts.—Cast Fast Joint, Narrow..........dis 60&10 %
" " Broad..........dis 65&10 %
Cast Loose Joint, Narrow..........dis 70&10 %
" " " Broad..........70&10 %
" Acorn, Loose Pin..........dis 65&10 %
" Acorn " Jap'd..........dis 67½&10 %
Mayer's Loose Joint..........dis 70&10 %
Wrought Loose Pin..........dis 40&10 %
" Table Hinges and Back Flaps.....dis 35&10 %
" Narrow, Fast..........dis 40&10 %
" Loose Joint..........dis 40&10 %

Blind Butts.
Parker..........dis 60 @ 60&10 %
Clark..........dis 60 %
Shepard..........dis 60 %
Lull & Porter..........dis 66⅔&10 %
Huffer's..........dis 33⅓ @ 33⅓&10 %

Chains.—German Halter and Coil......dis 30&5 % gold
Galvanized Pump..........₩ ℔ 10½c net
Best Proof Coil Chain—(English).

₩ ℔......11½	8½	7¾	7½	8½	8½	7c gold
3-16	¼	5-16	⅜	7-16	½	⅝ in.

Chisels.—Socket Framing..........dis 65, 5&10 %
Socket Firmer..........dis 65, 5&10 %
Butcher's..........$5 00 to £ gold

Casters.—Bed..........dis 50&10 %
Plate..........dis 50&10 %

Coffee Mills.—Box and Side..........dis 25 %
Enterprise..........dis 20 %

Cutlery.—Walden Pocket..........dis 30 @ 33 %
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net

Drawing Knives.—
Hart Mfg Co.'s..........dis 65, 5&10 %
Adjustable Handle..........dis 20 %

Fry Pans.
Tinned..........dis 50&10 @ 60 %

₩ doz..$3·50	4 00	4·50	5·00	5·50	6·50	7·50	9·00	10·00
No..... 0	1	2	3	4	5	6	7	8

Burnished..........dis 50&10 @ 60 %

₩ doz..$3·00	3·75	4·25	4·75	5·25	6·00	7·00	8·00	9·00
No.... 0	1	2	3	4	5	6	7	8

Files.
Nicholson..........dis 35 %
Disston..........dis 35
Butcher..........$1 50 £ gold
Spencer..........$4 50 @ 4 75 £ gold

Fluting Machines.
Imperial—4½ in. roll..........each $4 50 net
" —6 in. roll.......... " 00 net
Eagle—3½ in. roll..........per doz. $30 00 }
" —5½ in roll.......... 40 00 }
Crown—1½ in. roll..........Each 4 00 } dis 45 %
" —3 in. roll.......... " 4 75 }
" —8 in. roll.......... " 7 25 }
Geneva Fluter..........per doz. 15 00 net
Favorite com. Fluter & Sad-iron..₩ doz $30 dis 25&10 %

Hammers.
Yerkes & Plumb's..........dis 25 @ 30 %
Hammond & Son's..........dis 25 @ 30 %

Hatchets.
Yerkes & Plumb..........dis 25 @ 30 %
Hammond..........dis 25 @ 30 %
Hunt..........dis 25 %

Hinges.
strap and T..........dis 60 @ 60&5 %

Horse Nails.

	Nos. 5	6	7	8	9	10
Ausable	30	27	25	24	23	22
" Polished & P't'd and blued and Pointed	31	28	26	25	24	23
Globe..........Net l'st	26	23	21	20	19	18
Clinton	22	20	19	18	17	
" Polished and Pointed	23	21	20	19	18	

Southern, all sizes..........₩ ℔ 14c. net
Discount on Ausable and Clinton, 20 %; Globe, net.

Locks and Knobs.
Branford..........new list, dis 60&10&2 % cash
Gaylord Cabinet..........dis 25&2 % cash
United States Lock Co..........dis 35 %
American Padlocks..........dis 23⅓, 5&2 % cash
Scandinavian Pad Locks.

₩ doz...$5·00	5·50	6·50	7·50	8·50	10·00	12·50	
No...... 57	58	59	60	61	62	63	dis 50 %
₩ doz.....	$18·00		26·00		33·00		
No......	64		65		66		dis 50 %

Lanterns.—
Square Candle and Oil..........₩ doz. $2 75 @ 3 00
Tubular..........No. 0, $10·50; No. 1, 12·50 ₩ doz. net
Guards. 50 cents extra per doz. net.

Mattocks.—
Long and Short Cutter..........₩ doz. $9 00 @ 9 50 net
Pennsylvania Pattern.......... " 9 50 @ 10 00 net

Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets..........dis 20 %
Stebbins' Gates..........dis 62½&10 %
Lincoln's " ....dis 62½&10 %
Landers, Frary & Clark's Petroleum..........dis 20&10 %
Brass Liquor Cocks..........dis 5 %
Cork Lined " ....dis 65 @ 65&10 %

Meat Cutters.—Dixon's..........dis 25 @ 30 %
Woodruff..........dis 25 @ 30 %
Stowe..........dis 25 @ 30 %
Hale's..........new list, dis 50&2 %
American..........dis 25 %
Stuffers..........dis 25 @ 30 %
Enterprise Stuffers..........dis 20 %

Planes.—Sandusky..........dis 35 %
Ogonts..........dis 10&10 %
Bailey..........dis 25&10 %

Plane Irons.—Sandusky..........dis 10&10 %
Butcher's..........gold £, $5 50

Plumbs and Levels.
Stanley's Adjustable..........dis 60&10 %
" Non-Adjustable..........dis 60&10 %

Picks.—Philadelphia..........dis 40 %
Hunt's..........dis 25 %

Pumps.—Bickford..........$7.00, dis 20&10 %

Rules—Stanley Boxwood..........dis 60&10 %
Stanley Ivory..........dis 50&10 %

Steelyards.—Hart's Pattern..........dis 60&10 %

₩ doz.......$14·50	17 75	21·00	26·50	31·00	35·50
Lbs 50	100	150	200	250	300

American Pattern..........dis 25 @ 25&10 %

₩ doz.....$5·50	7·00	9·00	10·00	11·00	12·00
Lbs....... 50	100	150	200	250	300

English Pattern..........dis 25 @ 25 %

₩ doz......$7·00	8·67	10·67	12·67	14·67	16·67
Lbs....... 50	100	150	200	250	300

Squares.—
Steel and Iron..........dis 50 %; full case, dis 50&10 %
Try Squares, Stanley..........dis 45&10 %
Disston's Try Squares..........dis 45 %

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened..........₩ doz. $9·00 net
Clipper No. 10, Bronzed Blade Boxed and Sharpened..........₩ doz. $8·50 net
Clipper No. 8, Painted Red, Boxed and Sharpened..........₩ doz $8·25 net

Saws—Disston's Hand, Panel and Rip..........dis 20 %
Disston's Circular..........dis 30 %
Cross-Cut No. 2, Plain Tooth..₩ ft., 45c. net
" " Patent Tooth..........₩ ft., 45c. net
" " Champion Tooth....₩ ft., 35c. net

Shovels and Spades.
Rowland..........dis 50&5 %
Oliver Ames & Sons, new list..........dis 32½ %
Not stamped "Ames"..........dis 37½ %

Sad Irons.—4 to 10 lbs..........₩ ℔, 2¾ @ 2⅞c
Mrs. Potts' Patent..........dis 30 @ 40 %

Stone.—Arkansas Oil Stone..........₩ ℔ $2·00 net
Washita Extra.......... " 36c net
" No. 1.......... " 30c net
" " 2.......... " 25c net
" Slips.......... " 60c net
" Axe.......... " 25c net
Turkey Oil Stone No. 1.......... " 16½c net
" " " " 2.......... " 16c net
" Axe Stone.......... " 25c net
Hindostan Oil Stone No. 1..........₩ ℔ 4 @ 4½c net
" Axe Stone.......... " 5 @ 5½c net

Screws.
Flat Head Iron..........dis 65 %
" " Brass..........dis 50 %
Round Head Brass..........dis 50 %
" " Iron..........dis 65 %

Spoons.—
Plated..........dis 40 @ 40&5 %
German Silver..........dis 30&5 %
Britannia, Boardmans..........dis 50&10 %
" Parkers..........dis 50&10 %
Tinned..........dis 15 @ 20 %
" by case..........dis 20 %

Springs—Torrey..........₩ doz $2·00 @ 2·10 net
Philadelphia ....5 in., $5·00; 8 in., $7·00 ₩ doz. dis 25 %
Chatfield.......No. 1, $3·50; 2, $4·00; 3, $6 00 ₩ doz. net
Gem Coil No. 1, Large Jap'd..........₩ doz $3·50 }
" " No. 2, Medium Jap'd.......... " 2·50 } dis
" " No. 3, Small " .... 2·00 }

Stocks and Dies...........dis 10&5 %

Stove Polish.—Gem..........₩ gross, $4·50, dis 5 %
Dixon.......... " $6·00, dis 5 %
Onyx.......... " $4·00 @ 4·25 net

Tacks, Brads, &c.—New List..........dis 5 @10 %
Shoe Nails—
4-8 and larger, 9c; 3½-8, 9½c ₩ ℔ New list, net
Double Pointed Tacks..........dis 40&5 %

Traps.
Genuine Oneida—Newhouse..........dis 30 %
Im. Oneida—Newhouse list (1st qual.)..........dis 60 %

Vises.—Solid Box, Trenton..........₩ ℔ 11½ @ 12½c net

Wrenches.—
Girard (Coe's Pattern).......dis 50&10 %, case 50, 10&5 %
Agricultural—
₩ doz 10 in., $3 60; 12 in., $5 40 net; case dis 5 %
Coes' Genuine..........dis 50&10 %
" Pat. Wrot Bar..........dis 60&10 %
" " Mall " ....dis 75&10 %
Taft's " Wrot " ....dis 75 @ 75&10 %
Phila. Tool Co., Duplex..........dis 25 %

Wire.—
Bright or Ann'd, No. 0 to 18..........dis 57½ %
" " No. 19 to 26..........dis 60½ %
" " No. 27 to 36..........dis 62½ %
Coppered 0 to 18..........dis 47½ %
Tinned Broom Wire..........dis 47½ %
Galvanized, No. 7 to 18..........Market list, dis 30 %

Wringers.—Novelty No. 10..........₩ doz. $60·00 net
Novelty No. 2.......... " 68·00 net
Universal, No. 2½.......... " 60·00 net
" No 2.......... " 68·00 net

PITTSBURGH.

Merchant Iron.

Flat Bar.

1¼ to 4x¾ to 1 in......1.80c	1¼ and 1⅜x⅜ to ¾ in..1.90c
4¼ to 6x⅜ to 1 in......1.90c	1 and 1¼x⅜ to ¾ in... 2c
1⅜ to 6x1⅛ to 1½ in...2.20c	⅝, ¾ and ⅞x⅜ to ⅝ in.2.20c
Rounds and Squares.	⅝ to 9-16 in.......... 2c
1 to 1⅞ in..........1.80c	½ to 7-16 in..........2.20c
2 to 2⅝ in.......... 2c	⅜ in..........2.40c
2¾ to 3¼ in..........2.30c	5-16 in..........2.60c
3⅜ to 4 in..........2.80c	¼ in..........2.80c
¾ to ⅞ in..........1.90c	3-16 in..........4.80c

Horse Shoe Bar—all sizes..........2.80c

Heavy Bands.	1 to 1⅜x¼ and 5-16..2.10c
3½ to 6x¼ and 5-16 in. 2c	¾ to ⅞x¼ and 5-16..2.30c
1½ to 3¼x¼ & 5-16 in. 2c	⅝ & ½x¼ and 5-16..2.80c
Light Bands.	1 to 1⅜x⅛ to 3-16......2.50c
3 to 6x⅛ to 3-16 in.....2.10c	¾ and ⅞x⅛ to 3-16 in..2.80c
1½ to 2¾x⅛ to 3-16 in..2.30c	⅝ and ½x⅛ to 3-16 in..3.30c

Same sizes X No. 11 and No. 12 2-10c. extra.

Hoop Iron.	⅝ & 9-16, Nos. 17 to 20..4.80c
⅝ & 9-16, Nos. 13 to 16..4.50c	¾ & 11-16, Nos. 17 to 20.4.30c
¾&11-16, Nos. 13 to 16.. 4c	⅞ & 13-16, Nos. 17 to 20.3.80c
⅞&13-16, Nos. 13 to 16..3.50c	1 and 1⅛, Nos. 16 to 19.3.40c
1 & 1⅛, Nos. 13 to 15..3.10c	1¼ to 2, Nos. 16 to 18.2.90c
1¼ to 2, Nos. 13 to 15..2.70c	2¼ to 3½, Nos. 13 to 15.2.80c

The prices under Hoop Iron do not apply to Cotton Ties.
1-10c ₩ ℔ extra for each gauge lighter.

Oval Iron.

⅞ to 1¼ in..........2.20c	½ in..........2.60c
⅝ to ¾ in..........2.40c	⅜ in.......... 3c
Half Oval & Half Round	⅜ in..........3.30c
⅞ to 1¼ in..........2.50c	¼ in..........4.80c
⅝ to ¾ in.......... 3c	W'g'n Box Iron, ¾&⅞.3.30c

Sheet Iron.

	Com'n.	Charc'l		Com'n.	Charc'l
No. 10 to 14..	2.60c	4.10c	No. 22 to 24..	3.30c	4.80c
No. 15 to 17..	2.80c	4.30c	No. 25 & 26..	3.50c	5c
No. 18 to 21..	3.10c	4.60c	No. 27..........	3.70c	5.20c
			No. 28..........	4.10c	5.60c

All Sheets, No. 18 and lighter, over 30 in. wide, not less than 2-10c. extra.

Wood's Patent Planished Sheet.
1st quality (A)..........10½c | 2d quality (B)..........9½c

Plate Iron—3-16 to ½ in. thick..........2.60c

Galvanized Iron-Juniata.

Nos. 14 to 20..........12c	No. 27..........15c
Nos. 21 to 24..........13c	No. 28..........16c
Nos. 25 and 26..........14c	No. 29..........18c

Common and imperfect Juniata, 45 to 50 % off. Discount, 30 to 40 %.

Roofing Iron, Corrugated or Crimped.

Galvanized Common.	Black.
No. 20..........70, net cash	No. 20.......... 4c
No. 21 to 24..7½&8c, "	Nos. 21 to 24..........4¼c

Bridge Iron.

Carnegie Bros. & Co.'s list.

Beams and Channels.
Solid Wrought Iron Beams, 3 to 10½ in.x30 ft..₩ ℔ 3 c
" " " " 12 in. by 25 ft.......... " 3
" " " " 15 in. by 25 ft.......... " 3¼c
Deck Beams, 7 to 9 in. by 30 ft.......... " 3 c
Channel Bars, 1½ to 10 in. by 30 ft.......... " 3 c
" " 12 in by 30 ft.......... " 3¼c

Tee Iron.
1 in.x1 in. to 5 in.x3 in..........₩ ℔ 2.9c

Angle Iron.
Equal Sided, 1x1 to 1¾x1¾ in..........₩ ℔ 2.7c
" " 2x2 to 4x4.......... " 2.6c
Unequal Sided, 2x1¾ to 5x4.......... " 2.6c
Square Root Angles, 2x2 to 3½x3½.......... " 2.6c
Star Iron, 1½x1½ to 4x4.......... " 2.7c
Sash Iron, 1¾x⅞x3-16.......... " 3.25c
Miscellaneous Shapes, various shapes...₩ ℔, 2.6 to 3.5c

Nails.

Fence and Brads.

10d to 60d..........	$2.50	4d and 5d..........	$3.25
8d and 9d..........	2.75	3d..........	4.00
6d and 7d..........	3.00	2d..........	5.25
Barrel.		1½ in..........	4.25
¾ in..........	6.50	1¼ "	4.00
⅞ "	5.50	1⅜ "	3.50
1 "	5.00	1½ "	3.25
Lining.			
⅞ in..........	7.00	¾ in..........	8.50
Tobacco Hhd.		8d..........	3.25
10d..........	3.00	6d and 7d..........	3.50
Clinch—All sizes..........			4.25
Slating.			
5d..........	3.50	3d..........	4.25
4d..........	3.50	2d..........	5.50
Finishing.		1½ to 1¾ in..........	4.50
1 in..........	7.50	2 in..........	4.25
1¼ "	6.50	2½ "	4.00
1⅜ "	4.75	3 " and over..........	3.75
Casing and Box.		6d..........	3.75
10d to 30d..........	3.25	4d..........	4.00
8d..........	3.50	3d..........	5.00
Fine Blued.		3d..........	5.50
4d..........	4.25	2d..........	6.25

Cut Spikes—All sizes..........2.75
Boat Spikes—All sizes..........3.25
Each half keg 10 cents extra.

TERMS.—Note or acceptance at 60 days; or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice. An abatement of 10 cents per keg allowed upon orders of 200 kegs or over.

Steel.

Square, Flat and Octagon Tool Steel.

⅜ to 2 in..........13c	7-32 and 4½ 5 in..........16c
5-16 and 2½ to 3 in..........14c	3-16 and 5⅛ to 6 in..........19c
¼ and 3⅛ to 4 in..........15c	5-32 in..........24c

Single and Double Shear Nailers—Same as Tool.
Knife, Tap, Die, Mill Pick, Drill—Ordinary sizes.....13c

Machinery Steel—Round.

⅜ to 2 in..........7½c	7-32 and 4½ to 5 in.....10½c
5-16 and 2⅛ to 3 in......8½c	3-16 and 5⅛ to 6 in.....13½c
¼ and 3⅛ to 4 in......9½c	5-32 in..........18½c
Cast Spring Steel.	1½ to 3x5-32 to 3-16 in...7½c
1 to 4x1¼ to ½ in......6½c	⅞ to 1⅜x5-32 to 3-16 in..8½c

Agricultural Steels.
Solid Cast Steel Plow, 4 to 16 by 3-16 to ⅜ in.......... 7c
"Iron Center Plow," 4 to 16x3-16 to ⅜ in.......... 8c
"Iron Back Plow," 4 to 16x3-16 to ⅜ in.......... 8½c
Soft Steel Center Plow, 4 to 16x3-16 to ⅜ in.......... 9c
Landside and Cultivator, C. S., ⅜ in. thick.......... 9½c
Circular Plow Coulters, 5-32 to ¼ in. thick..........11c
Reaper and Scythe..........13c
Fork and Hoe.......... 7c
Horse Rake Teeth, to length.......... 8c
Finger Bar.......... 8½c
Cutter Bars, C. S.......... 8½c
" " German Spring Steel.......... 7½c
Cornstalk Cutter beveled to length.......... 8c
Planters' Hoe, C. S.......... 9c
Hoe, C. S.......... 7½c

Sheet Steels.

German, 10 to 16 g...... 8c	Common C'st, 17 to 20 g.10c
" 17 to 20 g......11c	Best Cast, 10 to 16 g.....13c
Common C'st, 10 to 16 g. 9c	" " 17 to 20 g.....14c

Rolls and Castings.

Furnace, Floor and Straightening Plates..........1¾ @ 2c
Housings and Castings not otherwise specified....2½c
Guide Plates..........3 c
Spindles and coupling boxes..........2 @ 2½c
Sand Rolls and Pinions, large size..........2½c
" " " small size..........3 c
Pipe Mill Castings..........4 c
Rolling Mill Castings under 50 lbs..........3 c
Spur and Bevel Wheels, large..........3 @ 3½c
" " small..........4 @ 4½c
Pulleys up to 30 inches..........4 c
" over 30 inches..........3¼ @ 3½c
Engine Castings, light..........3¾c
" " heavy..........3¼c

Chilled Rolls.
6 to 7 in. diam., 7 to 20 in. long..........6 c
8 to 15 in. " 8 to 40 in. " ....5 c
15 to 24 in. " 15 to 72 in. " ....4 c
24 to 31 in. " 72 to 108 in. " 4½c

Heavy Hardware.

Bolts, Screws, Nuts, etc.
Lewis, Oliver & Phillips, discount off Standard List.
Carriage & Tire Bolts, ordinary orders 75 & 3 % off net
Stove Bolts..........40&5 % off net
Elevator Bolts..........30 % off net
Machine and Square Head Bolts..........60&10 % off net
Coach and Lag Screws..........60&10 % off net
Bolt Ends..........60&10 % off net

Pat. Hot Pressed Sq. and Hex. Nuts......8c ₩ ℔ off net
Washers, all made from new band iron..8c ₩ ℔ off net
Nuts and Washers in 25 ℔ boxes, ½c ₩ ℔ ex. Nuts and Washers in lots less than one keg each size, ½c ₩ ℔ ex. Nuts and Washers in 5 ℔ boxes, 1c ₩ ℔ ex.
Strap and T Hinges..........60&12½ % off net
Harrow Teeth..........net
Skein Bolts..........net
Cast Iron Washers..........3¼c ₩ ℔ net
Fire Shovels and Pokers..........50 % off

Wagon Hardware.

Single Trees, Neck Yokes and Double Trees, made from best selected hickory, and ironed complete, in the most approved patterns.
No. 1 Southern Plow Single Tree, Ironed complete, Irons all Wrought..........each, 25c net
No. 2 Western Plow Single Tree, Ironed complete, Irons all Wrought..........each, 35c net
No. 3 Wagon Single Tree, Iron complete, Irons all Wrought, except Malleable Ferrule..........each, 50c net
No. 4 Wagon Single Tree, Ironed complete, Irons all Wrought; Improved End Pieces riveted on; one side acts as a wear iron for wheel to rub against..........each, 50c net
Neck Yoke, Ironed complete, Irons all Wrought except End Ferrules, with Wt. Iron Rings..........each, 60c net
Southern Plow Double Tree, Ironed complete, Irons all Wrought..........each, 50c net
Wagon Box Strap Bolts—
For orders of 100 Set, 45&10 % dis.

10 in. long by	7-16 at Screw End, ₩ set of	8	bolts..	45c
12 in. "	½ "	"	8	" ..	55c
10 in. "	9-16 "	"	8	" ..	65c
12 in. "	9-16 "	"	8	" ..	70c
14 in. "	9-16 "	"	8	" ..	80c
10 in. "	⅝ "	"	8	" ..	80c
12 in. "	⅝ "	"	8	" ..	80c
14 in. "	⅝ "	"	8	" ..	90c
16 in. "	⅝ "	"	8	" ..	1.00
18 in. "	⅝ "	"	8	" ..	1.10
20 in. "	⅝ "	"	8	" ..	1.20

5c ₩ set for each additional inch over 14 inches. All lengths made.

Chains, Straight or Twist Link.

Reiter & Morton's List.

5-16..........7c	⅜..........5¾c
⅜..........6c	9-16..........5¼c
7-16..........6c	⅝..........5c

Net cash, 30 days.

Horse Shoes, Etc.—In 100 keg lots.

Juniata Horse Shoes..........per keg, $3.50
" Mule " .... " 4.50
" "Roadster" pattern.......... " 3.75
Steel Toe Calks..........per 7½c lb.
Thistlewood & Co.'s Self-Sharpening Horse Shoes..........per keg, $5.25
Thistlewood & Co.'s Self-Sharpening Snow Shoes.......... " 5.50
Toe Calks..........per lb. 8c

White and Red Lead.

Assorted Kegs (all sizes)..........8c
25 ℔ Tin Pails, 100 ℔ Cases..........8½c
12½ ℔ Tin " " 9c
Red Lead..........in kegs, 6¾c; in barrels, 6½c.
Orange Mineral.......... " 9½c; " 9 c.
Litharge.......... " 6¾c; " 6½c.
Dry White Lead.......... " 7½c; " 7¼c.
White Lead in Oil in lots of less than 500 lbs., ½c additional.
Terms: Note at sixty days, or if paid within 15 days from date of invoice, a discount of 1½ per cent. will be allowed, but not otherwise.

Window Glass.

Per Box of 50 Feet.—Discount 75 %.

Single Strength.

Size.	AA.	A.	B.	C
6 x 8 to 10 x 15..........	$7.50	$6.75	$6.25	$5.7[illegible]
11 x 14 to 16 x 24..........	8.50	7.75	7.25	6.5
18 x 22 to 20 x 30..........	10.75	9.75	8.75	7.7[illegible]
15 x 36 to 24 x 30..........	12.25	10.75	9.00	
26 x 28 to 24 x 36..........	13.00	11.50	9.75	
26 x 36 to 26 x 44..........	14.50	13.25	10.75	
26 x 46 to 30 x 50..........	15.00	14.00	11.25	
30 x 52 to 30 x 54..........				
30 x 56 to 34 x 56..........				
34 x 58 to 34 x 60..........				
36 x 60 to 40 x 60..........				
Double Strength.				
6 x 8 to 10 x 15..........	12.00	11.00	10.00	25
11 x 14 to 16 x 24..........	13.75	12.50	11.75	10.50
18 x 22 to 20 x 30..........	17.25	15.75	14.00	
15 x 36 to 24 x 30..........	19.75	17.25	14.50	
26 x 28 to 24 x 36..........	21.00	18.50	15.75	
26 x 36 to 26 x 44..........	23.25	21.25	17.25	
26 x 46 to 30 x 50..........	24.00	22.50	18.00	
30 x 52 to 30 x 54..........	25.75	23.25	19.25	
30 x 56 to 34 x 56..........	27.75	25.00	21.75	
34 x 58 to 34 x 60..........	29.25	27.75	24.00	
36 x 60 to 40 x 60..........	33.25	30.00	27.75	

An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 81 united inches, will be charged in the 84 united inches bracket.

CHICAGO.

(The Chicago Stamping Co., 10, 12 & 14 Lake St.)

November 12, 1878.

Tin Plate.—

10x14, IC, Ch'l. Good. $6 25	14x20, IXX. Ch' Best.	10 50
10x14, IC, " Best, 6 50	14x20, IXXX. " "	12 50
10x14 IX, " " 8 50	DC, 100 Plate " "	6 50
12x12, IC. " " 6 00	DX. "	8 50
12x12, IX, " " 8 50	DXX. " "	10 50
14x20, IC, " " 6 50	DXXX " "	12 50
14x20, IX, " " 8 50	IC, Roofing, " "	6 0
	IX, " "	8 00

20x28, IC, Charcoal Roofing, Good..........
20x28, IC, " Best..........12 50
20x28, IX, " 16 50
10x14, IC, Coke Plates..........6 00
14x20, IC, " 6 00
10x20, IC, " 9 50

Block Tin —
Large Pigs.......... 19c | Bars..........21c
Small.......... 20c |

Zinc.—Sheet, 500 to 1000 ℔. Casks..........6½c
Loose Sheets..........6 c
Slab Zinc or Spelter..........6 c

Copper.—Bottoms..........25c
Sheathing..........28c
Planished..........38c
" Boiler lengths..........35c
Ingot..........19c
Bolt..........24c

Braziers' Sheets.—
30x60, 6 to 7 lbs...₩ ℔ 30c | 30x60, 10 to 12 lbs..₩ ℔ 26c
30x60, 8 to 9 lbs. " 28c | 30x60, 15 to 100 lbs. " 24c

Solder.—F. S. & Co.'s make
Best Fine..........14c
No. 1..........13c
Roofing..........11½c
Braziers or Spelter Solder..........23 @ 25c

Antimony..........16
Babbit Metal—F. S. & Co.'s..........1[illegible]c
No. 2..........10c

Sheet Iron.—

	Common.	Smooth. Com.	Smooth Charcoal.	Smooth Juniata
No. 24..........	3·10c	3·90c	5⅜c	7 c
25 & 26...	3·30c	4·10c	6 c	7¼c
27..........	3·5 c	4·30c	6¼c	7½c

Galvanized Iron.—dis 45 %

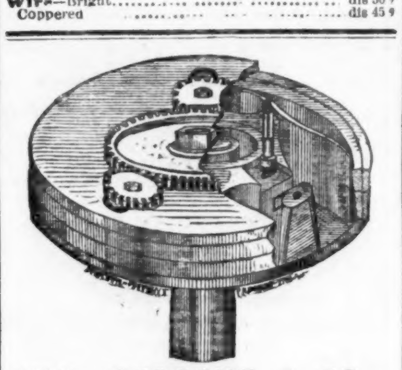
No. 16 to 20..........12c	No. 27..........15c
21 to 24..........12c	28..........16c
25 & 26..........14c	

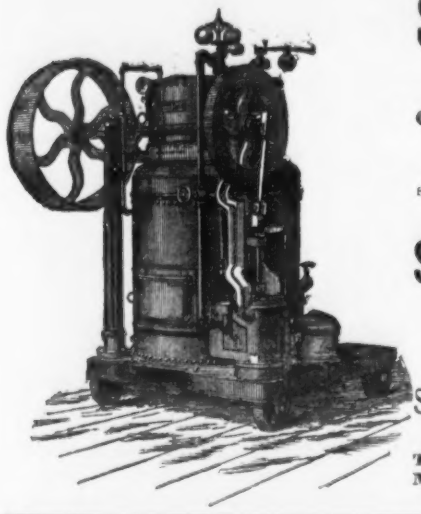
Russia Iron.—
Perfect..........14c | No. 1 Stained..........13½c
| In Sheets, 1c. higher.

American Russia.—
A..........10½c | B..........9½c
| In sheets, 1c higher

Lead.—
Pig..........5 c | Lead Pipe, in full coils 5
Bar..........6 c | Lead Pipe, when cut.. 5½
| Sheet Lead..........6

Wire—Bright..........dis 50 %
Coppered..........dis 45 %





SHAPLEY ENGINE.

Patented - - - - Feb. 10, 1874.
Reissued June 22, 1875.

Compact, Practical, Durable and Economical.

Acknowledged to be the best in use. This boiler stands unrivaled.

MANUFACTURED BY

SHAPLEY & WELLS,

Binghamton Iron Works,
Binghamton, N. Y.
MANUFACTURERS OF

Stationary Engines and Boilers.

Also **Machinery for Mills** of all kinds and **Tanneries.** Also their celebrated **Bark Mills,** acknowledged to be the best.
Send for reduced price list circular.

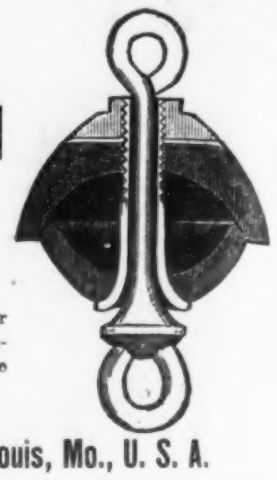
L. M. RUMSEY & CO.,

SOLE OWNERS AND MANUFACTURERS OF

Witherell's and Churchill's Patent

RUBBER BUCKETS, PUMP CHAIN AND FIXTURES

For Chain Pumps.

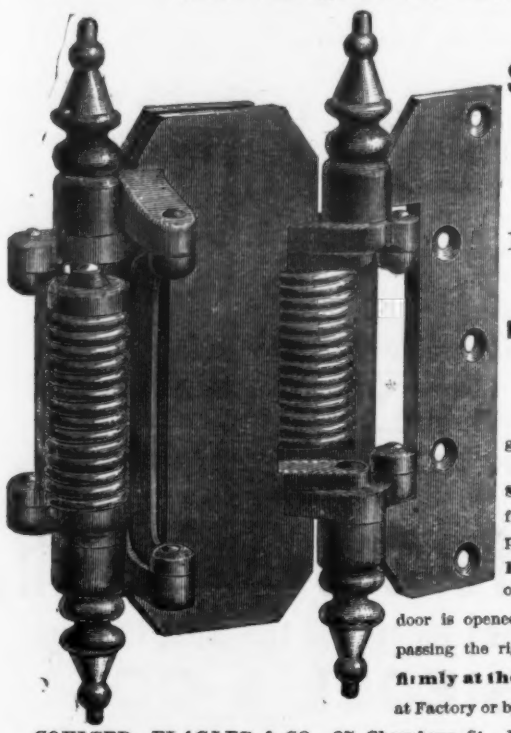


These Patents cover the use of the Rubber, the use of the Nut and Bolt for expanding, the use of the Tube and Valve for draining. All others are infringements, and manufacturers and dealers in infringing Buckets will be prosecuted to the full extent of the law.
For Rubber Buckets, Chain Tubing, Curbs and Fixtures, address

L. M. RUMSEY & CO., 811 North Main Street, St. Louis, Mo., U. S. A.

The Cowles Hardware Co.,

UNIONVILLE, CONN., U. S. A., Manufacturers of



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Single and Double Acting

SPRING BUTTS.

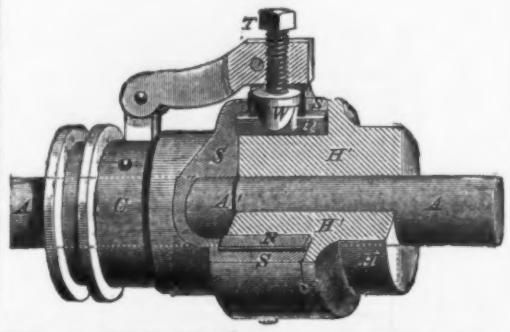
Latest and Best.

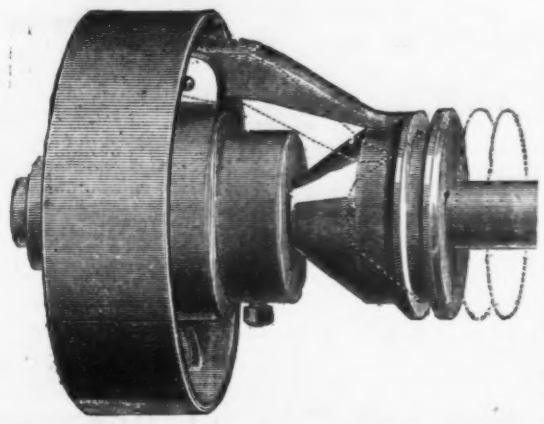
Investigate before you Purchase.

Large quantities already in use and giving universal satisfaction.

Reverse in **principle,** having **Springs** for **power** and **Toggles** for **levers,** in **combination,** so applied as to exert their **greatest power** when the **door is closed;** offers less resistance the wider the door is opened; **retains** the **door open** after passing the right angle; **holds the door up firmly at the top. Orders filled promptly** at Factory or by our Agents:

COULTER, FLAGLER & CO., 87 Chambers St., New York: SAM'L G. B. COOK & CO., Baltimore, Md.; BAILEY & RICHARDSON, St. Louis, Mo.; MARKLEY, ALLING & CO, Chicago, Ill.





HUB FRICTION CLUTCH.
James Smith & Co., Mfg. Agents

PATENT HUB FRICTION CLUTCH.

Manufactured by the **HUB FRICTION CLUTCH CO., Limited, Philadelphia.**

We claim for this device the following advantages for a perfect clutch, it having been adopted by several of the leading manufacturers of machinery and machinists' tools: It works easily but effectively. It works instantly and without noise. It is very durable, and is extremely simple and cheap, and has proven itself to be the best clutch in the market. Special arrangements can be made with leading manufacturers for the adoption of this clutch for their own tools. This clutch can and will be sold for less money than any other clutch in the market.
For sale by GEO. V. CRESSON, Philadelphia; MORTON, REED & Co., Baltimore.
JAMES SMITH & CO., Mfg. Agents, 137 Market Street, Philadelphia.
H. S. MANNING & CO., NEW YORK AGENTS, 111 Liberty Street.

SAM'L COULTER. A. FLAGLER. JAS. FORSYTH.

COULTER, FLAGLER & CO.,

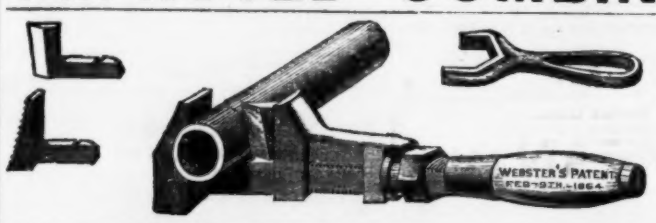
87 Chambers and 69 Reade Sts., New York,

Hardware Manufacturers' Warehouse.

OFFICE AND WAREHOUSE OF

UNION HARDWARE CO.,
RUGG MFG. CO., Draw Knives, Chisels, &c.
DEUSE BROS., Bits, Corkscrews, &c.
RICHARDSON BROS., Saws of all kinds.
BROOK'S EDGE TOOL CO.'S Axes, Hatchets, &c.
M. PRICE, Hatchets, &c.
J. & W. ROTHERY, Extra Hand Cut Files.
L. D. FROST, Carriage Bolts, Refined and Norway Iron.
COWLES HARDWARE CO., Screwdrivers, Mincing Knives &c.
RIDER, WOOSTER & CO., Anti-Friction Barn Door Hangers, &c.
H. B. HAWLEY, Shears of all kinds.
WALDEN KNIFE CO., Pocket Cutlery.
AMERICAN SCREWS.
N. Y. ANTI-FRICTION METAL CO.'S Babbitt Metals.
HOWARD, Razor Strops.
C. FORSCHNER, Spring Balances.
P. LOWENTRAUT & CO., Dividers, Calipers, &c.
SHEPARD HARDWARE CO., Fluters, Blind Hinges, &c.
SAXTON & AMEDON, Braces, all kinds.
BEVIN BROS. MFG. CO., Bells, all kinds.
B. H. PARSONS & BRO., Plyers, Nippers, &c.
C. L. GRISWOLD, Cast Steel Bits.
LANCASTER LOCK WORKS, Jail Locks.

IMPROVED COMBINATION WRENCH.



This WRENCH combines in one Tool

THE BEST SCREW WRENCH

and PIPE CUTTER and PIPE TONGS.

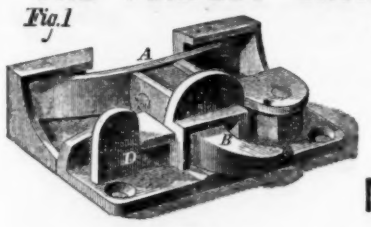
Adopted by Railroad, Gas & Water Companies everywhere, also by Machinists, Plumbers & Gas Fitters.

H. A. ROGERS, Sole Manufacturer, 19 John St., New York.

Price as low as any other first-class tool. Send for circular.

THE PERFECT SASH TIGHTENER AND LOCK.

Fig. 1



Manufactured entirely from Malleable Iron, Burglar Proof, Anti-Rattling, Draws Sash to Exact Center. No Springs to Get out of Order.

The Best in the Market.

METALLIC CLOTHES PIN,

For either Wire or Rope Line,

Will securely hold any article, from a silk handkerchief to a carpet. No article can be blown away. Does not soil the clothing. Manufactured by
CLARK & SMITH, Patentees, Chester, Orange Co., N. Y.
SOLE AGENTS,

J. I. BROWER & SON,

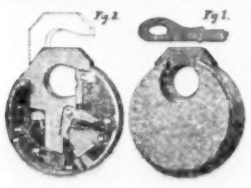
286 Greenwich St., New York,

Who keep a general assortment on hand for the country trade. **Jowett's Horse Rasps,** 14, 15 and 16 inch, **Maharay's $10 Tire Shrinker, Heller's Rasps.** Send for Circular.
SPECIAL DISCOUNTS TO JOBBERS.

MORTIMER'S PATENT RAPID TRANSIT WRENCH,

For SIMPLICITY, CONVENIENCE, DURABILITY and STRENGTH it has no equal.

They are made of drop forging of best material; the sliding jaw of cast steel. A slight pressure with the thumb upon the strap of the jaw over the spring, sets the wrench to any size in a moment.
Manufactured by **ISRAEL H. JOHNSON, JR., & CO.,**
Manufacturers of Lathes and General Machinery,
OFFICE AND FACTORY, 12th and Noble Sts., - - PHILADELPHIA, PA.



D. K. MILLER LOCK CO.,

712 Cherry St., Philadelphia.

Greatly improved. Prices reduced. As now made it is the best and most economical Pad Lock for all uses extant. Appreciated by all who use them. For simplicity, compactness, durability, convenience and security it has no equal. Springs now made from the celebrated Phosphor Bronze. We make these Locks with Master Keys when so ordered. Largely used by the U. S. Government, Railroads, Corporations, etc., etc. Samples of 2¼ in. size sent per mail on receipt of one dollar.

Send for Catalogue of the

FIRMENICH Safety Steam Boiler.

The Boiler that made the hottest, dryest and greatest quantity of Steam at the Centennial Exhibition. Tubes never require cleaning or scraping. Boilers in use for four years without getting dirty.
J. C. & F. FIRMENICH,
Office, *13 Mortimer Street, Buffalo. N. Y.*

MOHAWK & HUDSON MFG. CO., Waterford, N. Y. (four miles from Troy

Eddy Valves.

FIRE HYDRANTS.

Yard Hydrants, Street Washers.

DODGE HAY PRESS.

"DRAW-UP" PRESSES,
For Domestic use, Drugs, &c.
LARD & TALLOW PRESSES.
See *The Iron Age* of July 4, 1878.

Axe, Hatchet, Powder and Brush Machinery.

IRON AND BRASS CASTINGS.
Pulleys and Shafting.

JOHN STARR,

Hardware & Metal Broker,

AND

MANUFACTURERS' AGENT,

Halifax, Nova Scotia,

Representing in the Dominion of Canada several American Manufacturers, is ready to accept further Agencies. Satisfactory references.

NEW IRON TACKLE BLOCKS.

Norcross Patent.

Galvanized Malleable Iron Shell and Sheave, Steel Hooks, Steel Pins.

Superior to Wood Blocks on account of not Checking and Cracking.

The Strongest, Lightest, Easiest Running and most Durable Block yet produced.

Send for sample and price list of same to

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Providence Tool Co.,

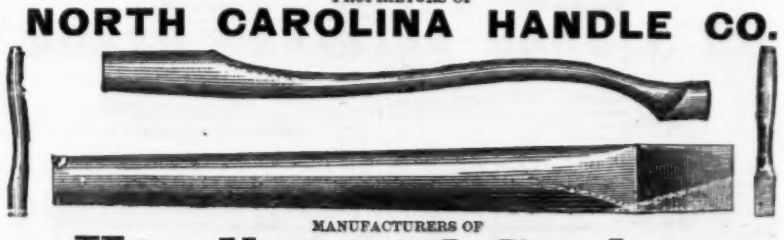
PROVIDENCE, R. I.

Or to **J. H. Work, 13 Pearl St., Boston, Mass.; S. H. & E. Y. Moore, 68 Lake St., Chicago, Ill.; Henry B. Newhall, 11 Warren St., N. Y.**

HUNDLEY & HANKS,

PROPRIETORS OF

NORTH CAROLINA HANDLE CO.



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79 Reade Street and 97 Chambers Street, - - - NEW YORK.
HARDWARE COMMISSION MERCHANTS.

BOSTON.

Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.

Anvils.—"Eagle American" ₱ lb 9c. dis 20 %
Apple Parers.—Reading ₱ doz $4.50
Lightning ₱ doz 6.50
Reading "78" ₱ doz 7.50
Aiken's Tools dis 40&10 %
Anvil & Vise.—
No. 1, $4.50; 2, 3.75; 3, 3.00 each dis 25 %
Augurs & Bitts.—Snell's Auger dis 50 %
L'Hommedieu's Ship Augers dis 15 %
Jenning's Bitts dis 10& 10 %
Cook's Bitts dis 40 %
Shepardson's Double-Cut Bitts dis 45 %
" " Gimlets dis 45 %
Stearn's Extension Hollow Augers per doz $36.00
Bonney's " " " per doz 33.00
Axes.—Blue Jackets per doz 8.00
Red Cross per doz 7.50
" Handled per doz 9.50
Dowse " Boys' dis 15 %
Ax Handles.—
Oak Extra, 31 in., No. A ₱ doz $2.25
" 34 in., No. A ₱ doz 2.50
" 31 in., No. B ₱ doz 1.75
" 34 in., No. B ₱ doz 2.00
" 31 or 34 in., No. C ₱ doz 1.25
Axle Clips dis 50 %
Balances.—Chatillon's dis 25&10 %
Barn Door Rail.—
Cast Angle (for Anti-Friction Hangers) per ft. 3c
" Half-Round per ft, ⅝, 2½c; ¾, 4½c
Wrought " per ft, ⅝, 3½c; ⅞, 4c; ¾, 5c
Bells.—Connel's Crank Gong dis 40&10 %
Bird Cages.
Japanned M. B. & D., reduced list, 1878 dis 25 %
Brass " " 1878 dis 25 %
Blind Fasts.—Lock Fasts ₱ C sets $4.00
No. 6 Fasts ₱ C sets 4.00
Venzie Fasts ₱ C sets 7.00
Shedd's ₱ C sets 8.00
Blind Hinges.—Mall. Hook, 3 holes ₱ C sets 5.00
Brad Awl Handles.—
Phœnix Adjustable ₱ doz $2.00
Bolts.—Norway Iron Carriage dis 70&10 %
Common " dis 75&10 %
Borax.—Refined ₱ lb 90
Boring Machines.—Snell Upright each, $3.25
Snell Angle each, 4.00
" Augers ₱ set 1.75
Braces.—Barber's dis 40& 5 %
Spofford's dis 50 %
Backus' dis 60 %
Bracket Saws.
Bracket Saws, extra quality, to No. 5 ₱ gro $0.85
Steel Frame, with patterns ₱ doz 7.50
Bracket Saws.—Roger's each $2.25
Lester dis 25 %
Brackets.
H. B. & M. Flower Pot dis 50&10 %
Bronzed Shelf, M. B. & D. list dis 10&10 %
Bread Kneader.—Stanyan dis 25 %
No. 4 capacity 3 loaves ₱ doz $24.00
No. 5 " 5 " ₱ doz 27.00
No. 6 " 8 " ₱ doz 33.00
Bronze Hardware.—Norwalk Lock Co. dis 50&10 %
Butts.—Union Fast Joint dis 50&10 %
" Loose " dis 75&5 %
" Japanned Acorn dis 75&5 %
" Silvered " dis 75&5 %
" Boston Finish dis 75&10 %
Centennial Spring dis 25 %
Carriage Jacks.—Climax ₱ doz $15.00
" large size ₱ doz 18.00
Cartridges.—U. S. Cartridge Co. dis 60 %
Cards.—Sargent Horse and Curry dis 33⅓&10 %
Cotton dis 25&10 %
" Wool dis 25&10 %
Casters.—Bed and Table dis 50&10 %
Chain.—Traces 6½, 10, 4, straight ₱ pair 45c
" 6½, 10, 4, twisted ₱ pair 50c
" 7, 12, 2, " ₱ pair 75c
Coil 3-16 ₱ lb 10c
" ¼ ₱ lb 8c
" 5-16 ₱ lb 7c
" ⅜ ₱ lb 6c
" 7-16 ₱ lb 5¾c
" ½ ₱ lb 5½c
Chalk.—White, Carpenter's ₱ gross 55c
Red, Carpenter's ₱ gross 75c
Blue " ₱ gross 90c
Chisels.—Hart, Bliven & Mead, Framing dis 70 %
Underhill, Framing dis 25 %
Buck's Shank, Framing dis 25 %
Clothes Line.—
Galvanized Wire, 100 feet each ₱ doz $4.50
Coal Hods.—Ironclad.—Galvanized dis 25 %
Japanned dis 30 %
Copper Rivets. dis 25 %
Cocks.—Brass, L. F. & C. dis 50 %
Cordage.—Manila, usual trade dis ₱ lb 12c
Jute ₱ lb 9c
Cow Ties. dis 45 %
No. 30, 3 ft. No. 6 Wire, with toggle ₱ doz $3.60
No. 35, 3 ft. " " with snap ₱ doz 3.80
No. 40, 3½ ft. " " with toggle ₱ doz 3.90
No. 45, 3½ ft. " " with snap ₱ doz 4.10
No. 50, 4 ft. No. 4 " with toggle ₱ doz 4.60
No. 55, 4 ft. " " with snap ₱ doz 4.75
No. 60, 4½ ft. " 3 " with toggle ₱ doz 5.30
No. 65, 4½ ft. " " with snap ₱ doz 5.60
Crow-Bars.—Cast Steel ₱ lb 8c
Iron, Steel Pointed ₱ lb 5c
Cutlery.—Pocket, American Shear Co.'s... dis 33⅓&10
Butcher Knives, "Woods," Lap Bolster, Square Handle dis 33⅓ %
Steak Knives dis 20 %
Lap Bolster, Oval Handle dis 25 %
Sticking dis 33⅓ %
Skinning dis 33⅓ %
Butcher, Common Round Handle, "Woods" dis 25 %
Shoe Knives "Woods" dis 10 %
Dividers.—Cook's dis 25 %
Dog Collars dis 20 %
Dog Muzzles.—Automatic dis 15 %
Door Springs.—Torrey's Rod ₱ doz $9.00
Gem Coil dis 10 %
Eccentric Steel Coil Spring, No. 1 ₱ doz $2.75
Door Stops.—"Thurston's" dis 50 %
Drawer Knobs.—"Thurston's" dis 50 %
Drills.—Morse Bitt Stock dis 25 %
Morse Straight Shank dis 20 %
Emery.—Wellington Mills ₱ lb 10c
Alden's ₱ lb 6c
Enameled Ware.
Standard Mfg. Co. Kettles dis 60 %
" Sauce Pans dis 35 %
Felloe Plates.—Wrought ₱ lb 8c
Files.—Madden & Cockayne dis 50 %
American File Co. dis 40 %
Nicholson " dis 35 %
Fisting Machines.
Knox, with 6 inch rolls ₱ doz $36.00
Geneva ₱ doz 13.60
Rochester ₱ doz 12.00
Forks.
W. C. & Co., Manure, reduced list dis 15&10 %
Gimlet Bitts.
Genuine German, No. 125, 1-32 to 8-32, $1.00; 10-32, $1.10; 12-32, $1.20 ₱ doz gold.
Glass Cutters.
Combination Class Cutter and Knife Sharpener ₱ doz $1.25
Grub Hoes.—K. P. & Co.'s No. 2 ₱ doz 7.50
Hammers.—Maydole's dis 15 %
Hammond's dis 20 %
Dowse's Steel, A. E. ₱ doz $4.00
M. B. & D. dis 25 %
Hangers & Rollers.—Anti-Friction dis 60 %
Climax dis 50 %
Novelty dis 40 %
Common dis 50 %
Hand Screws dis 20 %
Hatchets.—Dis. 15 %
C. F. Dowse, Combination per doz. $10.00
Underhill dis 25 %
Hay Knives.—Lightning ₱ doz $18.00
Hinges.—Strap and T (new list) dis 60&10 %
Providence Plate ₱ lb 4c
Wrought Screw Hook ₱ lb 4c
Hoes.—W. C. & Co.'s (reduced list) dis 15&10 %
Hooks and Staples.—Brewers' dis 50 %
Horse Nails. No. 6 7 8 9
National Finished .23 .21 .20 .19 dis 15 %
Putnam Pointed .23 .21 .20 .19 net
Horse Nails.—Bridgewater dis 25 %
No. 6, 23; No. 7, 21; No. 8, 20; No. 9, 19.
Knobs.—"Norwalk."
Mineral ₱ doz $0.75
Porcelain, Japanned Mtg. ₱ doz .85
" Por. Rose Nickel Mtg. ₱ doz 2.50
" Plated " ₱ doz 2.50
Silver Glass ₱ doz 8.00
" Bell Pulls ₱ doz 6.00
Lanterns.—Tubulars, No. 0 ₱ doz 10.00
Railroad, Oil, No. 43 ₱ doz 8.00
Guarded, Oil and Candle, No. 25 ₱ doz 3.50
Triangular ₱ doz 4.00
Hurricane dis 20 %
Lead.—Sheet ₱ lb 6½c
Pipe ₱ lb 6½c
Locks.—Norwalk Lock Co. (reduced list) dis 50&10 %
Eagle Cabinet dis 25 %
" Trunk dis 25 %
W. Wilcox & Co., Padlocks dis 33⅓&10 %
American Lock Co.'s Steel Key dis 33⅓ %
Metallic Sieves.—Mann's Patent dis 33⅓ %
Manure Forks.—W. C. & Co. (r'duc'd list) dis 15&10 %
Mattocks.—K. P. & Co., Long Cutter ₱ doz $9.50
K. P. & Co., Short Cutter ₱ doz 9.00
" Pick ₱ doz 9.50
Measuring Tapes.—Eddy's dis 20 %
Meat Cutters.—Miles' Challenge dis 30 %
Hale's dis 50 %
American dis 25 %
Money Drawers.—Tucker's Alarm ₱ doz $27.00
Mouse Traps.—Delusion ₱ doz 2.00
Oilers.—Zinc and Tin dis 50 %
Brass and Copper dis 50 %
Ox Bows.—Extra finished and varnished dis 10 %
1¾ in., ₱ doz. pair..$5.75 | 2 in., ₱ doz. pair...$9.00
1¾ in., " " " .. 8.00 | 2½ " " " 11.00
Padlocks.—W. Wilcox & Co.'s dis 33⅓&10 %
Miller's Brass ₱ doz $9.00
Picks.—K. P. & Co., Adze Eye, 5 to 6 lb ₱ doz 6.50
" " 6 to 7 lb ₱ doz 7.00
Planes.—Auburn Tool Co. dis 35 %
N. Y. Tool Co. dis 50 %
English Iron dis 50 %
Salley's dis 25&10 %
Plated Ware.—Rogers & Bro. dis 40& 5
Pliers.—Vom Cleff & Co.'s Gold lis
Button's Wire Pliers dis 33⅓ %
Plumb & Levels.—Stanley, R. & L. Co. dis 60&10
Pocket Knives.
American Shear Co.'s dis 33⅓&10
Potato Diggers.
W. C. & Co. reduced list dis 15&10
Pulley Blocks dis 30 %
Pumps.—Union Manufacturing Co.
Iron Cistern dis 55 %
" Pitcher Spout dis 55 %
Copper dis 25 %
Rivets.—Black dis
Carriage in 10 lb papers dis 40
Copper dis 25
Razor Strops.—Torrey's Full line.
Rules.—Stanley Boxwood, dis 60&10 %
" Ivory, dis 60&10 %
Sadirons.—Common ₱ lb 2½c
Laundry ₱ lb 5c
Tailor's Geese ₱ lb 5c
Enterprise, "Potts" dis 33⅓ %
Mrs. Potts' Large Polishing, Nickeled ₱ doz net $3.50
Sash Locks.—King & Hutchinson's, new list dis 40 %
Hopkins & Dickinson's dis 40 %
Sandpaper.—Baeder & Adamson dis 15 %
M. B. & D. dis 20 %
Sash Weights.—Patent Eye ₱ lb 1½c
Saws.—Hand Saws, Disston's dis 20 %
Wheeler & Clemson dis 20&5 %
Cross-Cut Saws.
W. M. & C., Common Tooth, No. 1 ₱ foot 35c
" " Champion " ₱ foot 35c
Disston's, Common " ₱ foot 40c
" Gt. American " ₱ foot 44c
Boynton's Lightning " ₱ foot 45c
Saw Setts.—Spring Lever ₱ doz $10.00
Saw Blades.—Disston dis 20 %
W. M. & C. dis 20&5 %
Welch & Griffith, Extra ₱ doz $0.60
" " No. 2 ₱ doz 8.00
Scales.—Fairbanks dis 25 %
Howe dis 25 %
Screws.—Aiken's Flat-Head Iron dis 65 %
American Flat-Head Iron dis 65 %
" " Brass dis 50 %
" Round-Head " dis 35 %
" " Iron dis 80 %
Grilley " Nickel-plated Piano.. dis 55&5 %
" " " Common. dis 50
Shaves.—Kimball's ₱ inch 7½
Watrous dis 15 %
Shears.—American Shear Co. dis 75 %
Shot.—Tatham's ₱ lb 6c
Shovels.—O. Ames dis 33⅓ %
O. Ames, other brands dis 37½ %
M. B. & D. dis 37½ %
Oxford, Birmingham Pattern dis 45 %
Snow Shovels.—Malleable tips ₱ doz $5.00
Skates.—Union dis 25 %
Acme dis 20 %
Spoons.—Tinned Iron dis 15 %
Britannia dis 50 %
Rogers' A No. 1 dis 40&5 %
Stock and Dies.—King's dis 10&5 %
Tacks.—A. Field & Son's. dis 50&10 %
Pittsfield dis 50&10 %
Traps.—Oneida, Genuine dis 33⅓ %
Oneida, Imitation, H. & N. dis 50&10 %
Blake's dis 50&10 %
Tree Scrapers.—No. 1 ₱ doz. $2.0
No. 2 ₱ doz 3.0
No. 3 ₱ doz 4.0
Vises.—Solid Box, Blacksmith's ₱ lb 10½c
Simpson's Adjustable dis 20&5 %
Howard Vise Co. dis 33⅓ %
F. L. & Co., Solid Blacksmiths', new list dis 10 %
Weather Strips.
Browne's Flexible Rubber dis 30 %
In 20 feet boxes; No. 1, ⅝ in. wide, ₱ yard, 10c.; No. 2, ⅝ in., 15c.; No. 3, ¾ in., 20c.; No. 4, 1 in., 25c.
Valentine's Felt Moulding dis 30 %
Black Walnut Spring Weather Strips ₱ doz. $3.00
Window Awning.
Dearborns' per window; $1.00, dis 25 %
Window Springs. dis 10 %
Babcock's No. 3 ₱ gross $6.25
" " 4 ₱ gross 4.50
Wire Goods.—Gate Hooks and Eyes, &c. dis 70&10 %
Wrenches.—A. G. Coe's dis 60 %
Girard Mfg. Co. dis 50&10&10 %
Girard, in case lots dis 50&10, 10&10 %
Wringers.—Universal, No. 2 ₱ doz $65.00
Universal, No. 2½ ₱ doz 60.00
Novelty, No. 10 ₱ doz 60.00
" No. 2 ₱ doz 65.00
" No. 22 ₱ doz 67.00
Excelsior, No. A ₱ doz 78.00
" No. B ₱ doz 86.00
" No. CC ₱ doz 108.00
Novelty Set Tub, 2 ₱ doz 60.00
Eureka ₱ doz 54.00
Zinc ₱ lb 6c

Withington, Cooley & Co.—Hoes, Rakes, Forks, &c. dis 40 %. Special rate for Export.

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.)

Tin Plate.

IC, 10x14, Best Char.	$ 6·50	DX, 12½x17, B. Char.	$ 8 5
IX, 10x14, " "	8·50	DXX, 12½x17 " "	10 50
IC, 12x12, " "	6·4	DXXX, 12½x17 " "	12 5
IX, 12x12, " "	8·50	IC, 20x28, " "	14·00
IC, 14x20, " "	6·50	IX, 20x28, " "	8·00
IX, 14x20, " "	8 50	IXX, 20x24, " "	9·50
IXX, 14x20, " "	10 50	IC, 14x20, Best Roof.	6 00
IXXX, 14x20, B. Char.	12 50	IX, 14x20, " "	9·00
IXXXX, 14x20. " "	14·5	IC, 20x28, " "	12 00
IC, 12x26, " "	6·75	IX, 20x28, " "	16·50
IC, 14x14 " "	12 50	IC, 10x14, Best Coke.	5 75
IX, 14x14, " "	16·00	IC 14x20, " "	5 75
IXX, 14x14, " "	18 50	IC, 10x20, " "	9·00
DC, 12½x17, "	6·50		

Sheet Iron.	Com'n.	S L U Sm'th.	D. Ref'd Sm'th.	Juniat's Sm'th.
No. 16 to 20	3·c	3 8c	4 0c	4 0c
No. 22 to 24	3 0c	3 8c	5 0c	6 0c
No. 26	3·10c	3 9c	6· c	7·c
No. 27	3 20c	4· c	6·2c	7·4 :

Genuine Russia Iron.
Perfect—No. 9, 10, 11, 12 per lb. 12½c
No. 1 Stained—No. 9, 10, 11, 12 per lb. 12½ c
Tare 22 lbs. to Bdle. 2 or less than Bdle. add 1c. ₱ lb.

Patent Planished Iron
No. 24 to 27, A quality per lb. 9.10½c
" " B " " 9½c
For less than Bdle. add 1c. per lb.

Galvanized Sheet Iron.
Juniata, or 1st quality, Discount for full bundles 45 %

Block Tin.

Banca, Large Pigs	31c	do. Small	18
Straits, Large Pigs	17c	Bar	19c
Eng. Ref'd, Large Pig	14c		

Solder.

Extra in Bars	12c	No. 2, in Bars	9½c
No. 1, in "	10c	Spelter Solder	8c
Pig Lead —Pigs	4c	In Bars	5c
Antimony			14c
Bismuth			1 25
Nickel			2 00
Crucibles.—Dixon's			₱ No. 4½c

Babbit Metal.

No. 1	₱ lb. 16c	No. 3	₱ lb 11 c
" 2	" 14c	" 4	" 9½c

Copper.

Brazier's, 30x60,	14 to 100 lbs. Sheets		26c
" "	10, 11 & 12 lbs., "		28c
" "	8 and 9 lbs. "		30c
" "	6 and 7 lbs. "		32c
Finned, 14x48, 14 and 16 oz.			24c
Planished, 14x48, 14 and 16 oz.			28c
"	10 oz. per sheet less than 14 and 16 oz.		30c
Gutter Copper, 20 and 24x72, 10, 11 and 12 lb. Sheets			28c
"	14 lb. Sheets		26c
Reservoir Copper, 16x60 and 18x60			26c
Bar Copper, Square and Round,		⅜ to 1⅜ inch	30c
" "		⅜ inch	32c
Copper Bottoms			32c
Soldering Coppers			26c

Brass.
Roll, No. 10 to 28, 12 in. in width 25c
" 30, 12 in. in width 28c
" 32, 16 " 32c
" 34, 16 " 38c
" 36, 16 " 3·c
Platers, No. 40, 6 4

Brass and Copper Wire.

	Brass.	Copper.		Brass.	Copper.
No. 0 to 20	28c	34c	No. 24	35c	41c
" 21	31c	41c	" 25	38c	45c
" 22	32c	44c	" 26	40c	50c
" 23	33c	43c	" 27	43c	5·c

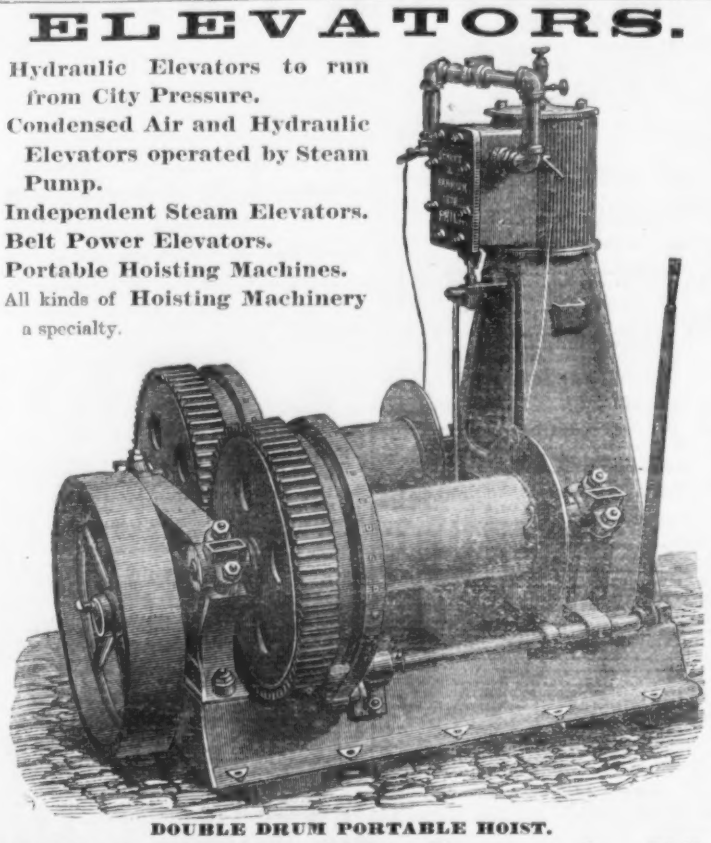
Brass Boring Wire, 2c. ₱ lb advance.

Brass Tubing.
Plain ⅛ to 3 inch 38c | 5-16 inch 38c
⅜ inch 38c | ¼ " 65c
Copper Rivets and Burs dis 25 %
Brass Kettles 8 to 12 inches ₱ lb 35c.
" all sizes over 12 inches " 40c.
Sheet Zinc.—600 lbs. cask ₱ 5½c
250 lbs. cask 6c
Sheet 6½c
Wire.—Iron, Bright Market dis 60
Iron, Coppered Market dis 45
Fence, Nos. 7, 8 and 9 ₱ lb 4
Trellis, Nos. 10 and 11 " 4½c
" No. 14 " 5 c
Hay Baling, Charcoal, No. 9 and 11 " 5
" " No. 12 " 5·4c
Broom, Tinned, Nos. 18 to 24 per Keg 5½c
Fence Staples per lb. 6
Iron Rivets.—Black, papered 5½ 2½
Tinned, papered 6½ 2½
In bulk.....new 8-16 ⅜ 5-16 ⅜ in diam
7·c 7·2c 6·1c 6·3c per lb.
Tacks.—New Hardware List dis 50
Sad Irons dis 40
Enameled Kettles.—Standard Mfg. Co. ₱ doz 8·2½c
Enameled Sauce Pans.
Standard Mfg. Co. dis 40
Enameled Boilers.—Standard Mfg. Co. dis 40
Dripping Pans.—Smooth Iron ₱ lb 8½c
Geneva Fluters per doz 12 1
Monroe Fluters " 12 1
Stove Polish.—Dixon's pc gross 6 1
Gem
Japanese
Dixon's, in bulk ₱ lb
Coffee Mills.—Parker's dis 40
Granite Iron Ware dis 60
Spoons.—New list dis 30
Retinned Iron Ware dis 15
Plain Stamped Ware dis 60 & 10 %
Japanned Ware.—St. Louis List dis 60 & 5 %
Fry Pans dis 40 & 5 %
Bars dis 40 %

ELEVATORS.

PASSENGER ELEVATORS. FREIGHT ELEVATORS.

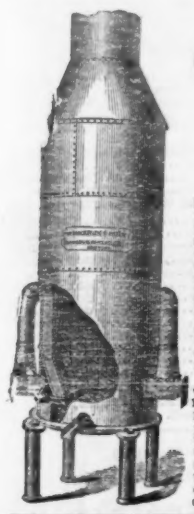
Hydraulic Elevators to run from City Pressure.
Condensed Air and Hydraulic Elevators operated by Steam Pump.
Independent Steam Elevators.
Belt Power Elevators.
Portable Hoisting Machines.
All kinds of Hoisting Machinery a specialty.



DOUBLE DRUM PORTABLE HOIST.

STOKES & PARRISH, 3001 Chestnut St., Phila.

THE MACKENZIE PATENT CUPOLA & BLOWER.



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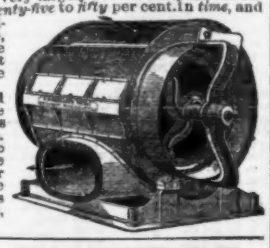
This Cupola has made a great revolution in melting iron. It differs from all others in having a CONTINUOUS TUYERE, or in other words, the blast enters the fuel at all points. Above one ton capacity per hour, they are made *oval in form*. This brings the blast to the center of the furnace with the *least resistance* and *smallest* possible amount of power, and in combination with the continuous Tuyere causes complete diffusion of the air throughout the furnace, and uniform temperature, melting *ten* or *fifteen tons* an hour with the pressure of blast required to melt *two* or *three tons* in an ordinary Cupola. It also enables us to save very largely in *time* and *fuel*, the experience of our customers showing a gain of *twenty-five* to *fifty* per cent. in *time*, and *twenty-five to forty* per cent *fuel* over the ordinary Cupola, and a BETTER QUALITY OF CASTING, especially in light work. This is due to the thorough diffusion of the air and more perfect combustion, extracting less carbon from the iron, making a softer and tougher casting.

We manufacture these Cupolas of any desired capacity, numbered from 1 to 20, inclusive, the numbers indicating the melting capacities in TONS PER HOUR—No. 1, one ton; No. 2, two tons; No. 3, three tons per hour, and so on up to 15 or 20 tons. We have *improved* the *construction* of these Cupolas in every way, have increased their strength and durability, and sought to make them as convenient for working and repairs as our own, and the experience of our customers, could suggest



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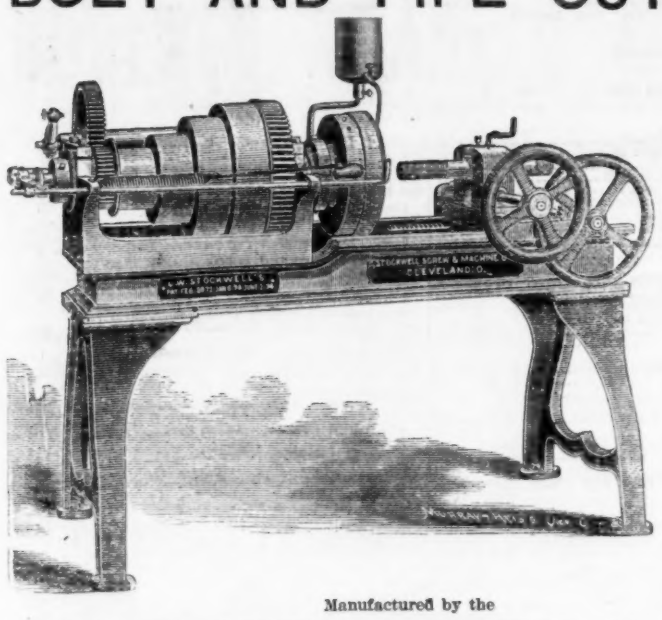

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No. 1 cuts ¼ to 1 inch.
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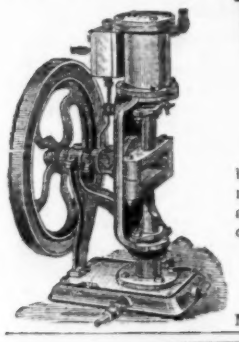

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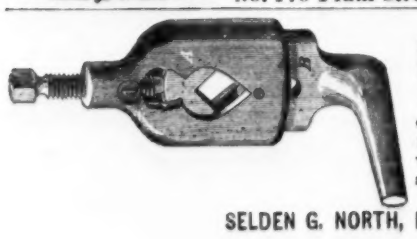

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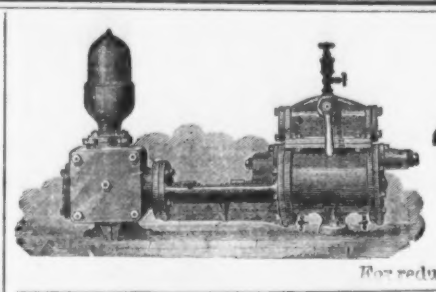

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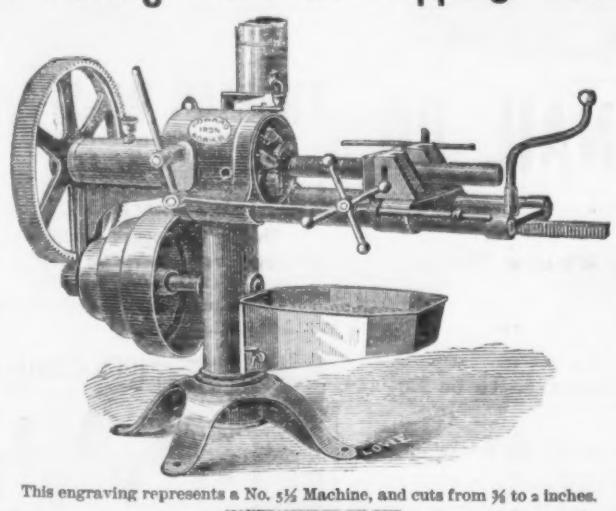

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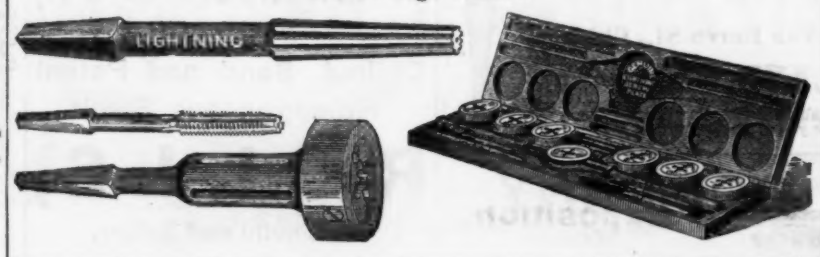

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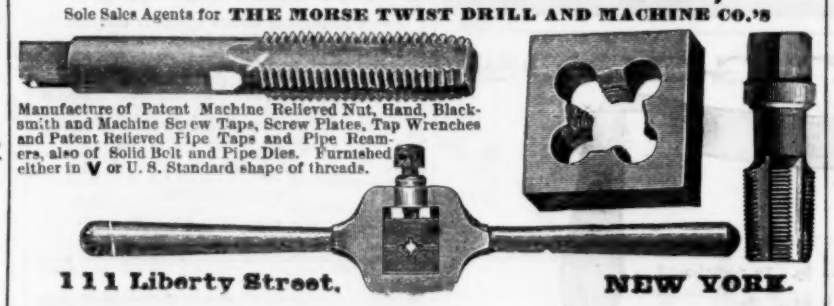

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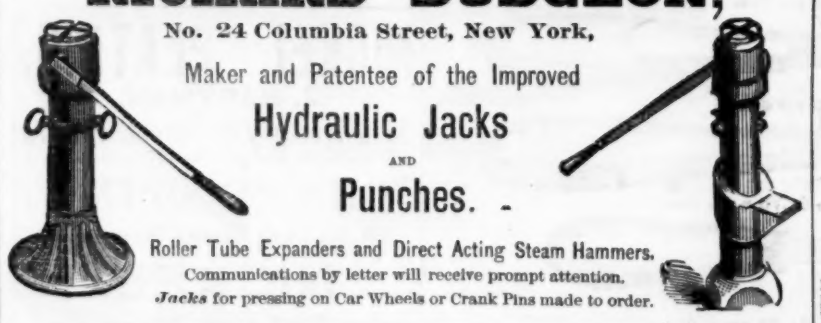

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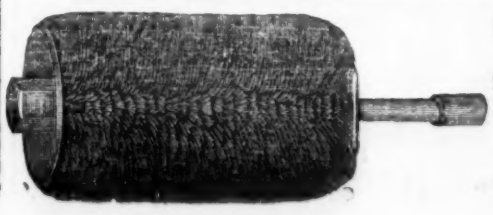

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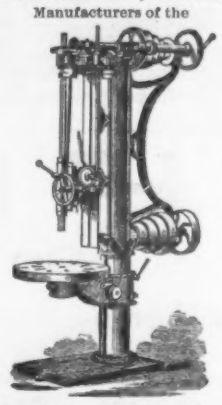

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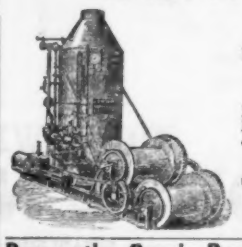

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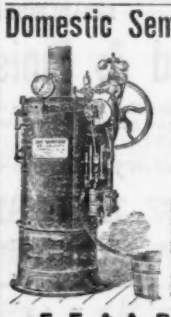

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3½	54.00	62.00	4.50	17.00
4	64.00	73.00	5.00	21.00
4½	74.00	84.00	5.50	25.00
5	84.00	95.00	6.00	31.00
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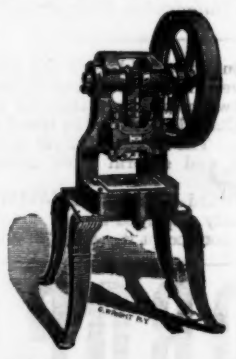

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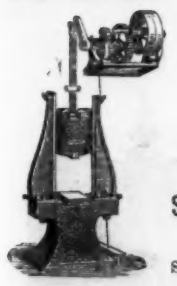

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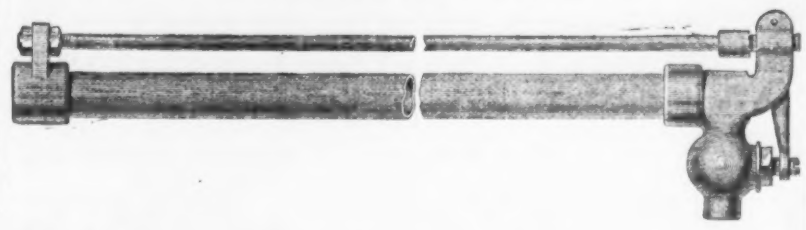

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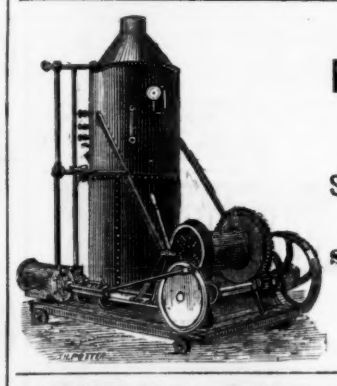

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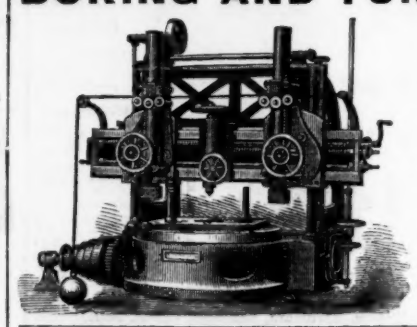

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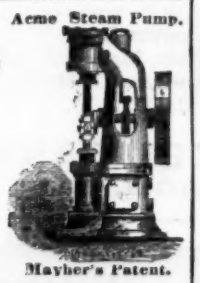

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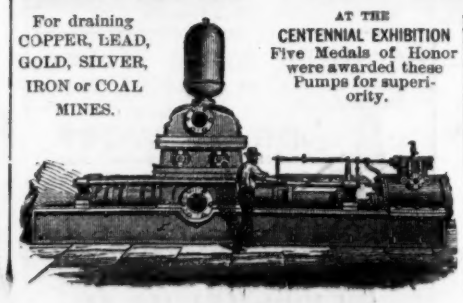

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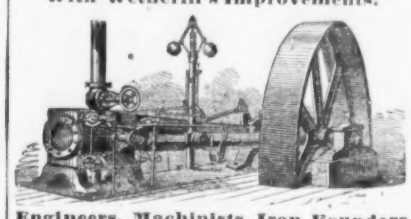

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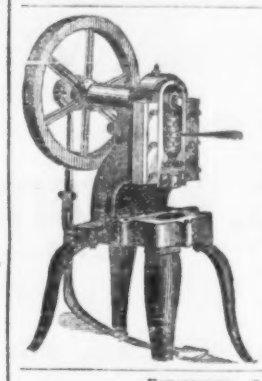

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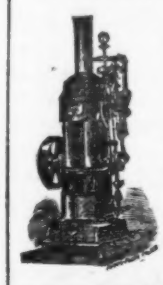

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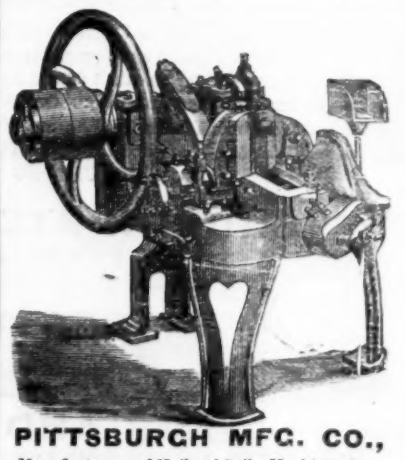

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